SEIR Attachment B

Gandy Connector (SR 600, US 92)

From the Gandy Bridge to the western terminus of the Selmon Expressway

Project Development & Environment (PD&E) Study

Final Preliminary Engineering Analysis (PEA)

WPI No: 255822-1

FAP No.: N/A

Hillsborough County

Prepared for the

Tampa-Hillsborough County Expressway Authority (THEA)

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PREFACE

The purpose of this report is to document existing conditions and the alternatives analysis that was conducted for the proposed Gandy Connector project. This report is one of a series of interrelated reports:

- *State Environmental Impact Report (SEIR)*
- *Preliminary Engineering Analysis (PEA)*
- *Environmental Technical Compendium (ETC)*

This *PEA* has been designated as "Attachment B" of the "*SEIR* with Support Documents" package or compendium. This *PEA* is not meant to be a stand-alone document; for example, purpose and need for the proposed project are documented in the *SEIR* and are not discussed in *this* report. Environmental conditions and expected project effects are documented in the *SEIR* and the *ETC*. The intent is to eliminate duplication of material and help facilitate "project streamlining". Taken together, these reports are meant to provide a comprehensive view of the work that was done for the Gandy Connector Project Development and Environment (PD&E) Study. Other separate documents that support this study include the *Traffic Technical Memorandum*, the *Cultural Resource Assessment Survey* and the *Comments and Coordination Report*.

Earlier related studies undertaken by the Florida Department of Transportation (FDOT) include a Major Investment Study (MIS) initiated in 1996 and earlier PD&E Studies; one which was suspended in 1993 following a public hearing and another which was suspended in 2002 prior to a public hearing.

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1.0 EXISTING CONDITIONS

The Gandy Boulevard corridor is primarily an east/west facility, which in its entirety, extends from a western terminus at US 19 in Pinellas County to an eastern terminus at the Bayshore Boulevard in Hillsborough County. Within the limits of this project Gandy Boulevard is designated as SR 600/US 92. See Location Map on **Figure 1** of the *State Environmental Impact Report (SEIR)* and Study Aerial Map on **Figure 2** of the *SEIR*. Gandy Boulevard from east of the Gandy Bridge to east of Dale Mabry Highway was recently improved by the Florida Department of Transportation (FDOT). Construction began in January 2008 and was completed in December 2009. This reconstruction project (WPI Segment No. 255822-2, "Aesthetic Enhancements and Operational Improvements") involved converting the existing highway from a 5-lane highway with a center turn lane to a four-lane divided highway with a 30-foot wide median. Sidewalks were constructed from Dale Mabry Highway to Bridge Street on both sides of the roadway. A multi-use path was constructed on both sides of Gandy Boulevard between Bridge Street and the Friendship Trail (which is now closed indefinitely due to maintenance issues and safety/liability concerns). The area between Dale Mabry Highway and the CSX railroad crossing (just west of the Selmon Expressway ramps) has been resurfaced. Manhattan Avenue intersection improvements included additional pavement to accommodate dual left turns in all directions and dedicated right turn lanes from Northbound Manhattan Avenue to Eastbound Gandy Boulevard, Eastbound Gandy Boulevard to Southbound Manhattan Avenue, and Westbound Gandy Boulevard to Northbound Manhattan Avenue. Photographs of the existing roadway (while under construction) are included in **Figure 1-1**. Renderings of the new construction project (FDOT WPI Seg. No. 255822-2) are included in **Appendix A**. A project location/study area map is included in the *SEIR*.

1.1 EXISTING ROADWAY CHARACTERISTICS

1.1.1 Functional Classification

Gandy Boulevard is classified as an Urban Other Principal Arterial highway; however this corridor also functions as a local neighborhood shopping area. It is also part the Florida Intrastate Highway System (FIHS). The FIHS is comprised of interconnected,

East of Manhattan Ave, Looking NE (Scan Design)

East of Manhattan Ave on South Side, Looking West

West of Manhattan Ave, Looking Southeast

East of Manhattan Ave, Looking NE (Sweetbay)

At Hesperides St, Looking Northeast

West of Culbreath Key, Looking East

Gandy Connector PD&E Study
From the Gandy Bridge to the western terminus of the Selmon Expressway
Hillsborough County, Florida

Figure 1-1: Photos of the Existing Roadway

TAMPA-HILLSBOROUGH EXPRESSWAY AUTHORITY

limited and controlled-access roadways including Interstate highways, Florida's Turnpike, selected urban expressways and major arterial highways. The FIHS is the *highway component* of the Strategic Intermodal System (SIS), which is a statewide network of highways, railways, waterways and transportation hubs that handle the bulk of Florida's passenger and freight traffic. The Gandy Boulevard FIHS-SIS designation ends/begins at the Gandy Boulevard/Selmon Expressway interchange; the Selmon Expressway is also a FIHS-SIS facility.

Gandy Boulevard is a key link in the regional transportation network. It is connected to 4th Street (SR 694), I-275 and US 19 in Pinellas County, and Westshore Boulevard, Dale Mabry Highway and the Selmon Expressway in Hillsborough County.

1.1.2 Typical Sections and Posted Speed Limits

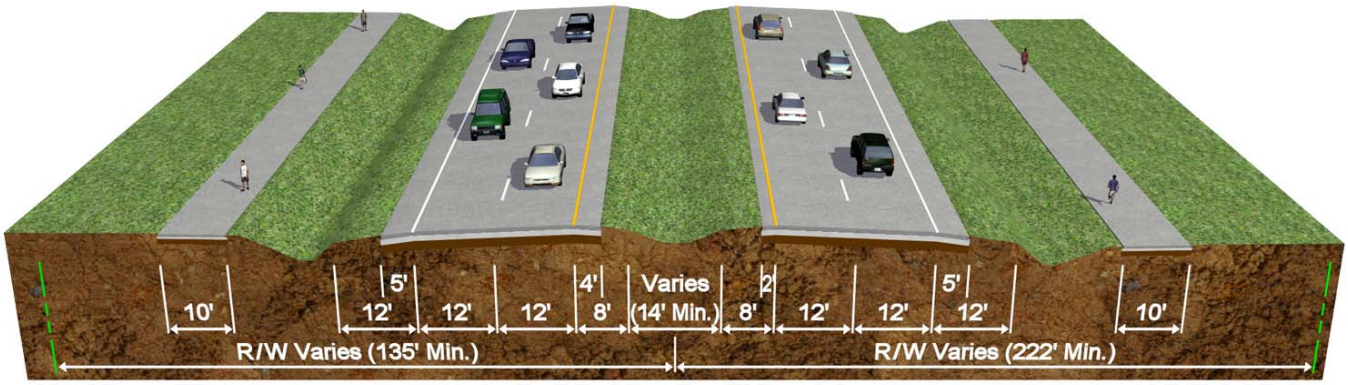
Existing typical sections are shown in **Figure 1-2** for the most representative cases.

East end of Gandy Bridge to Bridge Street

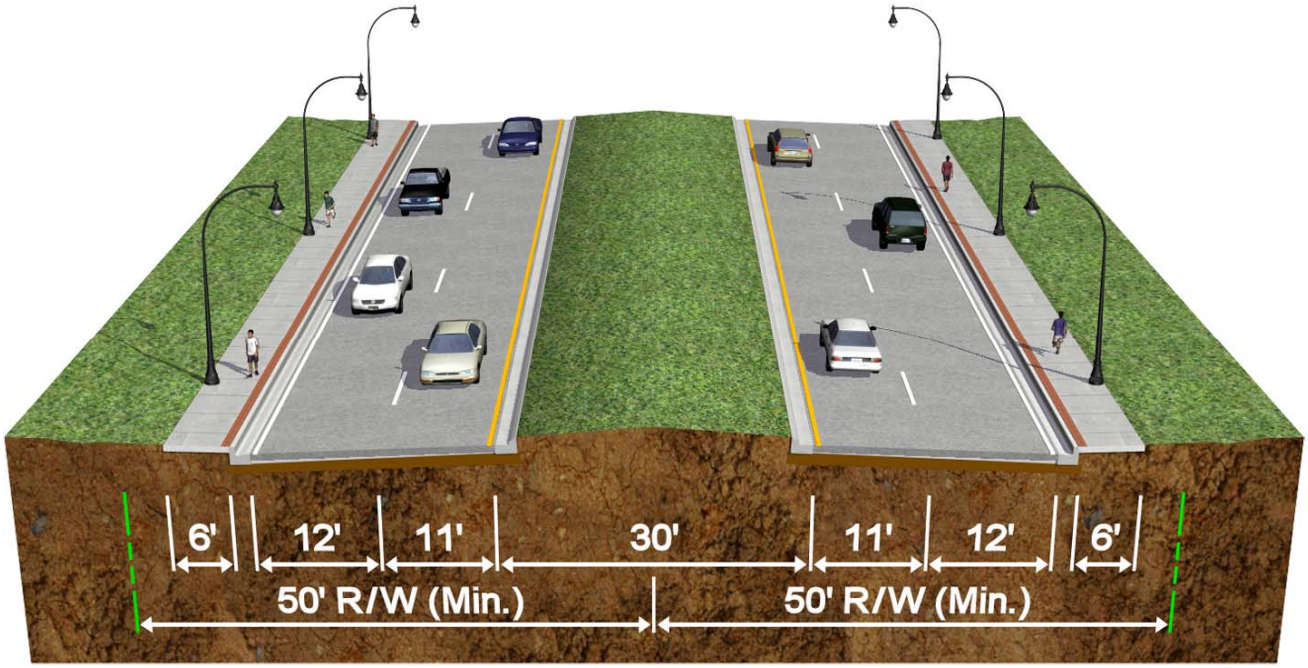
This is a 4-lane divided rural highway section with 12-foot lanes. There are 12-foot outside shoulders (5-foot paved) and 8-foot inside shoulders (4-foot paved). The depressed median is grassed and varies in width from 30 to 40 feet. There is a 10-foot shared use path on both sides of Gandy Boulevard that extends from the access road to the Marine Base to Bridge Street on the north side, and from the Coast Guard Reserve parking lot to Bridge Street on the south side. Open channel swales are located on either side of Gandy Boulevard between the shared use path and the outside shoulder. The right of way width varies from 1520 feet to 357 feet in this segment. The posted speed limit for this section of Gandy Boulevard is 55 mph.

Bridge Street to Church Street

This is a 4-lane divided urban highway section with an 11-foot inside lane and a 12-foot outside lane. There is a raised 30-foot median with type E curb and gutter. The outside lanes have type F curb and gutter. Six-foot sidewalks are provided on the entire length of this segment on both sides of the roadway adjacent to the back of the type F curb and



Representative Typical Section West of Bridge Street



Representative Typical Section Between Bridge Street and Dale Mabry Highway

gutter. The minimum right of way width is 100 feet. The posted speed limit for this section of Gandy Boulevard is 45 mph.

Church Street to Dale Mabry Highway

This is a 4-lane divided urban highway section with an 11-foot inside and a 12-foot outside lane. Additionally, this segment of Gandy Boulevard has 11-foot auxiliary lanes in each direction that connect to ramps leading to the western terminus of the Selmon Expressway. The grass and concrete raised median is 26 feet wide. A 5-foot sidewalk is provided along both sides of Gandy Boulevard. The Selmon Expressway crosses over this segment and has entrance and exit ramps that tie into both sides of the roadway. Support columns for the overpass are situated in the median. The posted speed limit for this section of Gandy Boulevard is 45 mph.

The posted speed limit along the existing Selmon Expressway facility is 55 mph.

1.1.3 Pedestrian and Bicycle Facilities

The existing urban typical sections do not include bicycle lanes nor do they provide additional pavement widths for bicyclists, as the outside lanes are only 12-foot wide. The rural section at the east end of the bridge has 5-foot paved shoulders, which can be used by bicycles as well as 10-foot wide shared use paths for access to the Friendship Trail bridge (which is now closed indefinitely due to maintenance issues and safety/liability concerns).

Sidewalks are provided on both sides of Gandy Boulevard between Bridge Street and Dale Mabry Highway. Pedestrian crosswalk signals are provided at the Westshore Boulevard, Manhattan Avenue, Lois Avenue and Dale Mabry Highway intersections. Americans with Disabilities Act (ADA) compliant curb-cut ramps are provided at all side street intersections and driveways. There are no designated school bus routes or school bus stops along the existing Gandy Boulevard for this segment, however, school buses do sometimes travel on or cross this segment. However, there are several schools south of Gandy Boulevard.

The west end of this segment connects with the Friendship Trail (now closed indefinitely as mentioned above). A "trail head" (parking facility) is located at the Hillsborough end of the Gandy Bridge. The City of Tampa has developed plans for a trail extension east from the Friendship Trail along the south side of Gandy Boulevard to Bridge Street, then south along the local street network to Westshore Boulevard near Tyson Avenue. This connection, called the South Tampa Greenway, continues east along the CSX railroad to Manhattan Avenue and then south. Eventually it will connect to Picnic Island, located west of MacDill Air Force Base.

1.1.4 Right of Way

From the east end of the Gandy Bridge to Bridge Street the right of way varies from 1520 feet (just east of the Gandy Bridge) to 357 feet. Much of the land on the north side of Gandy Boulevard is leased to the United States Marine Corps (USMC) on an annual basis. The USMC Amphibious Reserve Unit is located at this facility which is used to conduct training maneuvers. Also on the north side, the City of Tampa has a year-to-year lease for Palonis Park, which was dedicated for the preservation of mangrove and wetland areas.

Most of the land on the south side of Gandy Boulevard is leased to the Florida Fish and Wildlife Conservation Commission (FWC) for use by the Division of Law Enforcement. Some of the area on the south side is being used for an environmental mitigation project. However, the leases provide for the Department to retake control of the land, or portions thereof, for transportation needs such as this project.

From Bridge Street to Dale Mabry Highway, the right of way width is a minimum of 100 feet for this segment. For the Gandy Boulevard reconstruction project, additional right of way was acquired on the northeast side at Westshore and also at Gandy Boulevard/Manhattan Avenue intersection. There is also additional right of way near Dale Mabry Highway that is owned by the Department and used by the Tampa-Hillsborough County Expressway Authority and may be used for this proposed project.

1.1.5 Horizontal Alignment

The westbound Gandy Bridge construction was completed in 1997. The eastbound Gandy Bridge was constructed in the 1970's. The westbound lanes in Hillsborough County were modified to align horizontally and vertically with the bridges. Starting from the east end of the bridge, the roadway enters into a 1°00'00" reverse curve. The east and westbound curves have different lengths to transition the median width from 24 feet to 40 feet. These curves end west of Bridge Street where the alignment follows a tangent to Westshore Boulevard. Immediately east of Westshore Boulevard the roadway baseline makes a shift approximately 12.68 feet to the right over approximately 435 feet in length. From that shift, the alignment again follows a tangent until the start of a 2°00'00" reverse curve at Hesperides Street. The middle tangent of this reverse curve is centered across Manhattan Avenue, with the end of the curve just west of Lois Avenue. Following the reverse curve, the roadway remains tangent to beyond the end of the project at Dale Mabry Highway. The existing Gandy Boulevard alignment, in this segment, meets current FDOT and AASHTO design standards for sight distance.

1.1.6 Vertical Alignment

From the east end of the Gandy Bridge to Bridge Street, the roadway profile is split between the eastbound and westbound lanes. Along this segment there are a series of short vertical curves with connecting grades of 0.7 percent or less.

From Bridge Street to Church Street, the roadway is relatively flat with grades one (1) percent or less, with a majority of the longitudinal grades near the minimum of 0.3 percent. Most of the vertical curves have lengths of 135 feet, with a few as much as 300 feet in length; they are all within the criteria set forth in the FDOT's Plan Preparation Manual, Volume 1 Chapter 2.

From Church Street to Dale Mabry Highway, there are another series of short vertical curves with connecting grades of one (1) percent or less. Throughout this segment there are several tangent lengths of the grade line that are less than the 250 foot absolute minimum criteria set forth in the FDOT's Plans Preparation Manual, Volume 1, Chapter

2. For the urban portion, the minimum gutter grade should be 0.3 percent; however, the segment between CSX railroad and Dale Mabry Highway does not quite meet this minimum requirement; this segment was only milled and resurfaced in 2009 as opposed to total reconstruction.

1.1.7 Drainage

Stormwater runoff for the existing Gandy Boulevard right of way, from west of Bridge Street to east of Dale Mabry Highway is collected in roadway curb inlets that tie into a large box culvert (also known as the Gandy Flume) that runs along the north side of Gandy Boulevard. Beginning at the east end and flowing toward the west, the size increases from a single 10 foot x 4 foot concrete box culvert (CBC) to a (2)-8 foot x 4 foot CBC, which in turn connects to a concrete canal east of Trask Street. This canal is located at the back of the lots fronting on the north side of Gandy Boulevard, and it outfalls to Old Tampa Bay. The box culvert also receives the discharge from the existing FDOT storm water ponds for the Selmon Expressway located near the east end of the study area on the west side of Dale Mabry Highway. The Gandy Flume is noted to be the largest of four outfalls identified for the 2.71 square mile Norma Park drainage basin.

The roadway's urban drainage system was reconstructed by the FDOT in 2008 as part of the Gandy Boulevard reconstruction project, except for the large concrete box culverts. No ponds were constructed as part of this project; however, a Continuous Deflective Separation (CDS) unit was installed across from Bridge Street that ties into the box culvert (see inset color graphic). Drainage maps of the new system are included in **Appendix B**.

The flooding problems identified in the Norma Park Drainage Study (CDM, Inc., October 1990) along Gandy Boulevard between Trask Street and Church Avenue, in Hillsborough

County, are attributed to inadequacies in the existing storm drainage system, lack of maintenance and the low elevations of the surrounding topography. The Norma Park Drainage Study (City of Tampa) recommends construction of a 4-foot by 8-foot box culvert relief system adjacent to Gandy Boulevard. Subsequent improvements have been constructed both along the Gandy Flume conveyance system (noted above) and in the upstream FDOT storm water ponds located in the area between the railroad and the Selmon Expressway interchange. The pond improvements included providing additional storage volume and outfall control structure modification. No other record of flooding problems associated with the existing drainage system has been uncovered, and there are no known unresolved complaints from residents in the project area.

The existing stormwater system along the Selmon Expressway consists of a combination of shoulder gutter with inlets, ditch bottom inlets along the median, and cross drains. There is also a 5-foot x 4-foot box culvert crossing under the expressway approximately 0.25 mile north of Gandy Boulevard.

The existing stormwater system along the Dale Mabry Highway consists of curb inlets, side drains, and manholes. There is also a 5-foot x 4-foot box culvert crossing under the roadway approximately 0.25 mile north of Gandy Boulevard.

Floodplain Encroachments and Impacts

These are discussed in Section 3.5 of the *Environmental Technical Compendium* (Attachment C of the *SEIR* document).

1.1.8 Geotechnical Data

A description of existing soils data is included in Section 3.2 of the *Environmental Technical Compendium* (Attachment C of the *SEIR* document).

1.1.9 Crash Data

Crash data along Gandy Boulevard was extracted from FDOT's crash database for the most recent available 5-year period (2003 through 2007). It should be noted that only

crashes which involve injuries, fatalities, or major property damage are included in the FDOT database.

The crash data were also analyzed to identify any safety issues along Gandy Boulevard by dividing it into several segments based on the proximity of crashes to the nearest intersections. In general, crashes that occurred within an area 300 feet east and west of an intersection were considered intersection related, while the crashes that occurred outside this area were considered roadway segment related. However, because of the close spacing of the Manhattan Avenue and Lois Avenue intersections and between the Selmon Expressway and Dale Mabry Highway intersections, no roadway segments were assumed between these intersection pairs. Therefore, the study area was divided into 6 intersections and 3 roadway segments for the purpose of analyzing safety along Gandy Boulevard. **Table 1-1** summarizes the 5-year crash history at six intersections along Gandy Boulevard.

According to the summary table, Gandy Boulevard at Dale Mabry Highway had the highest number of reported crashes followed closely by the Manhattan Avenue intersection and then by the Westshore Boulevard intersection. Among the six intersections, Gandy Boulevard had the fewest intersection-related crashes at the Selmon Expressway Ramps intersection on Dale Mabry Highway. The majority of the crashes at the various intersections along Gandy Boulevard were rear-end, angle, left-turn and sideswipe crashes. The majority of the crashes occurring along Gandy Boulevard at the Selmon Expressway ramp intersections were rear-end, angle, and sideswipe crashes because of the merge weave conditions at these locations.

Table 1-1 5-Year Crash Summary at Six Intersections along Gandy Blvd

Intersections of Gandy Blvd. at:	Number of Crashes by Year					5-Year Total
	2003	2004	2005	2006	2007	
Westshore Boulevard.	25	14	19	17	34	109
Manhattan Avenue	39	23	34	24	25	145
Lois Avenue	6	11	3	8	6	34
Selmon Expressway Ramps	5	9	7	10	12	43
Dale Mabry Highway	41	31	28	38	27	165
Selmon Expressway Ramps on Dale Mabry Highway	2	3	2	1	1	9
Total Crashes Per Year	**118**	**91**	**93**	**98**	**105**	**505**

The 5-year crash history for the three roadway segments is summarized in **Table 1-2**.

Table 1-2 Five-Year Crash Summary at Gandy Blvd Roadway Segments

Roadway Segment of Gandy Boulevard Between:	Number of Crashes					5-Year Total
	2003	2004	2005	2006	2007	
Gandy Bridge and Westshore Blvd.	6	6	3	8	7	30
Westshore Blvd. and Manhattan Ave.	7	12	18	12	8	57
Lois Ave. and Selmon Expy. Ramps	7	6	4	8	5	30
Total Crashes Per Year	**20**	**24**	**25**	**28**	**20**	**117**

Table 1-2 indicates that the highest number of reported crashes along the Gandy Boulevard roadway segments during the 5-year period occurred between Westshore Boulevard and Manhattan Avenue. All of the roadway segments exhibit a similar crash pattern as those at the intersections (mostly rear-end, angle, left-turn and sideswipe crashes).

For better comparison of safety issues, **Table 1-3** summarizes the average annual number of crashes per mile on the various roadway segments.

Table 1-3 Summary of Crashes per Mile on Gandy Blvd Roadway Segments

Roadway Segment of Gandy Blvd. Between	Segment Length (miles)	Total Crashes 2003-2007	Crashes per Mile 2003-2007	Avg. Annual Crashes (per mile per year)
Gandy Bridge and Westshore Blvd.	0.731	30	41.0	8.2
Westshore Blvd. and Manhattan Ave.	0.397	57	143.6	28.7
Lois Ave. and Selmon Expy. Ramps	0.264	30	113.6	22.7

From a review of the data in **Table 1-3**, the segment of Gandy Boulevard between Westshore Boulevard and Manhattan Avenue had the highest number of crashes during the 5-year analysis period and the highest average annual crashes per mile per year. The Lois Avenue to Selmon Expressway Ramps roadway segment has the second highest average annual crashes per mile per year.

The 5-year crash history was also reviewed for fatalities, injuries, and crash ratios. This analysis provides an overall view of the safety for the overall facility. The results of this analysis are summarized in **Table 1-4**. As shown in the table, there were 622 total crashes along Gandy Boulevard during the 5-year period within the study area. These crashes included 1 fatality, 332 injuries, and 382 property-damage-only (PDO) crashes.

The *critical* crash rate and safety ratio are also summarized in the table. The critical crash rate is a function of roadway segment length, traffic volume, and the average crash rate for the category of highway being tested. The critical crash rate was obtained from the Florida Average Crash Rates for Urban Segments. The critical and actual crash rates are measured in number of crashes per million vehicle miles traveled.

Table 1-4 Summary of Crash Analysis along Gandy Blvd

Gandy Boulevard Between Gandy Bridge to East of Dale Mabry Highway	Year					5-Year Total
	2003	2004	2005	2006	2007	
No. of fatal crashes	1	0	0	0	0	1
No. of injury crashes	54	48	47	41	49	239
No. of property damage only crashes	83	67	71	85	76	382
Total crashes	138	115	118	126	125	622
Actual Crash Rate	4.46	3.56	3.32	3.61	3.56	Not/app.
Critical Crash Rate	3.845	3.773	3.717	3.650	3.684	Not/app.
Safety Ratio	1.160	0.944	0.893	0.990	0.965	Not/app.

* Obtained from Florida Department of Transportation – District Seven

The *safety ratio* is the ratio between the actual and critical crash rates for a given segment for a given year. It identifies safety issues or high crash segments along roads. A safety ratio greater than 1.0 indicates that the segment is experiencing more crashes than would be expected for this type of a segment in the other parts of the state. From a review of the above table, the safety ratio for this segment of Gandy Boulevard was greater than one (1) for 2003 and was less than one (1) for 2004 to 2007. It should be noted that this roadway was under construction for most of 2008, and with the addition of raised medians in 2009, safety conditions are expected to improve as a result of improved access management and the construction of intersection operational improvements at Gandy Boulevard and Manhattan and other locations.

1.1.10 Intersections and Signalization

Mast Arm mounted traffic signals on this segment are located at the Westshore Boulevard, Manhattan Avenue, Lois Avenue and Dale Mabry Highway intersections with Gandy Boulevard. Westshore Boulevard, Manhattan Avenue and Dale Mabry Highway are full 4-way intersections, with protected turning movements for all legs. Manhattan Avenue intersects at a slight skew, in the middle of a reverse curve on Gandy Boulevard. The intersections of Manhattan Avenue and Dale Mabry Highway feature dual left turns

for all legs of the intersection. Although Lois Avenue operates as a full signalized intersection, it is not a through street as the north side is an entrance to a shopping center. At Lois Avenue, protected turning signal phases are provided on Gandy Boulevard, but not on Lois Avenue. The signals on Gandy Boulevard are maintained by the City of Tampa.

In addition to traffic signals at intersections, there is a railroad-warning signal just west of the Selmon Expressway connection near the Church Street intersection.

1.1.11 Existing Lighting

Street lighting is provided along this segment of Gandy Boulevard by the FDOT and will be maintained by the City of Tampa Transportation Department. The lighting system was replaced in 2008 as part of the Gandy Boulevard reconstruction project. The new street lighting includes both conventional and decorative lighting, installed within the limits of the existing right of way.

Beginning at Bridge Street heading west (approximately 3,900 feet), the new lighting consists of 50-foot shoulder-mounted aluminum poles with single 15-foot davit arms mounted on frangible bases, with 400-watt high pressure sodium cobra-type luminaires, wired at 480 volts.

Between Bridge Street and Church Street (see color photo inset) the lighting consists of 20-foot mounting height decorative Sternberg steel poles (placed at the back of sidewalk), arm, banner, and decorative cast base with a pendent hung fixture using 150-watt high pressure sodium lamps.

Between Church Street and Dale Mabry Highway, the lighting consists of a 30-foot mounting height, decorative Sternberg steel pole placed at the back of sidewalk, arm,

banner, and decorative cast base with a pendent hung fixture using 150-watt high pressure sodium lamps.

Roadway lighting is also present along both sides of the Selmon Expressway from West Gandy Boulevard to West Euclid Avenue and along the west side of Dale Mabry Highway from Gandy Boulevard to Fair Oaks Avenue and at the eastbound entrance ramp of the Selmon Expressway.

1.1.12 Utilities and Railroads

Gandy Boulevard

The following utility company facilities located near or within the Gandy Boulevard portion of the study limits were taken from the Gandy Boulevard Utility Adjustment Plans for WPI Seg. No. 255822-2:

- Bright House Networks – Overhead and underground fiber optic facilities
- Verizon Florida, Inc. – Fiber optic cable and copper cable, underground and overhead parallel and crossing.
- TECO Peoples Gas – 2-inch gas line parallel and crossing Gandy Boulevard.
- Tampa Electric (Transmission & Distribution) – Wood and Concrete poles, with overhead power lines, parallel and crossing. Additionally there are buried service lines.
- City of Tampa Traffic Department – ITS fiber optic cable and Dynamic Message Signs.
- City of Tampa Water Department – Water Main parallel and crossing.
- City of Tampa Sewer Department – Gravity Sewer and Force Main parallel and crossing Gandy Boulevard.
- MCI, Fiberlight, & Time Warner Telecom – Underground fiber optic cable, underground facilities.
- Xspedius Fiber Group – Underground fiber optic cable.
- Teleport Communications Group (AT&T) – Underground fiber optic cable.
- Tampa Pipeline Company – 8” Jet Fuel Line crossing Gandy Boulevard at Westshore.

- P.E.A., Inc. AT&T– Underground fiber optic cable.

Storm drainage pipes are also located along and across Gandy Boulevard. There is a double cell box culvert (noted as the Gandy Flume in Section 1.1.7) located within the north right of way of Gandy Boulevard that continues to the west, north of the right of way as it crosses Manhattan Boulevard. There is also decorative lighting that runs the length of the study area along Gandy Boulevard (see Section 1.1.11).

The existing utilities along the Selmon Expressway between West Euclid Avenue and West Gandy Boulevard were ascertained from Sunshine One Call of Florida, South Selmon Expressway As-Built Plans, City of Tampa utility atlases, and field review.

Selmon Expressway

- An existing City of Tampa sanitary line crosses under the expressway approximately 0.25 mile north of Gandy Boulevard.
- CSX Railroad tracks run along the west side of the Selmon Expressway at a distance that ranges from approximately 30 feet to 425 feet.

Dale Mabry Highway

- An existing City of Tampa 20-inch water main runs under the outside travel lane of northbound Dale Mabry Highway from Gandy Boulevard northward.
- An existing City of Tampa sanitary line runs along the eastern right of way of Dale Mabry Highway from just north of Gandy Boulevard to approximately 0.25 mile north of Gandy Boulevard where it travels west across the roadway.
- Overhead power is located along the west side of Dale Mabry Highway from West Gandy Boulevard to just south of the Selmon Expressway and from north of the CSX Railroad crossing northward.
- Electric Power - Tampa Electric Company (TECO).

Railroads

Gandy Boulevard has an at-grade railroad crossing (#626349-E) in Hillsborough County just west of the Selmon Expressway connection. The crossing consists of one mainline

track, crossing at a slight southwest to northeast skew. The railroad company, CSX Transportation, Inc., reports that current operations include two movements per day, transporting general freight at a maximum train speed of 25 mph. These trips usually occur in the late morning and early evening. The average train length is roughly 1500 feet. This rail line runs southwest to service Port Tampa and includes a spur that services several shipyards north of Port Tampa. No changes in operations are anticipated at this time. Furthermore, there are no plans for future abandonment of this line.

The crossing was replaced in 2000 and is in good condition. The existing traffic control devices are Type IV, Class III, which consists of cantilever structures with signs and flashing lights, automatic gates, and bells. Advanced signing and pavement marking are also provided, as well as a flashing "NO LEFT TURN" side street warning device for Church Street, which connects to Gandy Boulevard just west of the railroad.

1.1.13 Pavement Condition

The existing roadway was still under construction when this Section was prepared. Future pavement inspections will rate the pavement based on three factors, on a 0-10 scale, with zero (0) the worst and 10 the best:

- Cracking
- Ride
- Rutting

1.1.14 Access Management Classification

Access management is the term that FDOT uses to describe the management of the location, number and spacing of connections, median openings, and traffic signals on the highway system. Research has shown that access management can lead to a significant increase in the safety and capacity of a roadway. Access management standards are defined in Florida Statute 335.18 Rule 14-96 and 14-97, in addition to the FDOT's adopted Median Opening and Access Management Decision Process (Topic No. 625-010-021). Gandy Boulevard is currently classified as "Access Class 3" west of Westshore Boulevard and "Access Class 7" east of Westshore Boulevard, according to

FDOT's RCI database. Standards for these access management classes are included in **Table 1-5**. The locations of the new median openings are shown on the concept plans in **Appendix A** of this report.

Table 1-5 FDOT's Access Management Standards

Access Class	Facility Design Features	Minimum Median Opening Spacing			Minimum Signal Spacing	Minimum Connection Spacing
	Median Treatment & Service Roads	Units	Directional (Prohibits left turns from side streets)	Full		>45 mph / ≤ 45 mph (posted speed)
2	Restrictive with Service Roads	ft	1,320	2,640	2,640	1,320/660
		mi	0.25	0.5	0.5	0.25/0.125
3	Restrictive *	ft	1,320	2,640	2,640	660/440
		mi	0.25	0.5	0.5	0.125/0.0833
4	Non-Restrictive	ft	N/A	N/A	2,640	660/440
		mi	N/A	N/A	0.5	0.125/0.0833
5	Restrictive	ft	660 ft	Over 45 mph / ≤ 45 mph 2,640/1320	2,640/1320	440/245
		mi	0.125	0.5/0.25	0.5/0.25	0.0833/0.0464
6	Non-Restrictive	ft	N/A	N/A	1320	440/245
		mi	N/A	N/A	0.25	0.0833/0.0464
7	Both Median Types	ft	330	660	1320	125
		mi	0.0625	0.125	0.25	0.0237

* Restrictive means medians which prevent vehicles from crossing due to curbs, grass, or other barriers.

Source: Florida Department of State, Florida Administrative Code, FDOT Rule Chapter 14-97.

1.2 EXISTING BRIDGES

There are four (4) bridges included within the study area; as shown in **Figure 1-3**. These are the northbound and southbound structures of the Selmon Expressway over Gandy Boulevard and over Dale Mabry Highway just north of Gandy Boulevard. The Gandy Boulevard and Dale Mabry Highway Bridges are AASHTO precast, prestressed concrete (PPC) I Beams and generally of the same type, function, and condition.

1.2.1 Bridge Typical Sections

- **Southbound Selmon Expressway over Gandy Boulevard (Bridge No. 100304)**: This is a 2-lane section transitioning to a single lane. The travel width at the south end of the bridge is 17 feet and at the north end is 24 feet. The bridge has a constant 4-foot shoulder on the outside while the inside shoulder varies from 4 feet to 8 feet. Concrete parapet barriers with steel handrails are located on the edges of the structure. The overall width of this structure varies from 31 feet - $2^5/_8$ inches to 36 feet - $2^5/_{16}$ inches.
- **Northbound Selmon Expressway over Gandy Boulevard (Bridge No. 100305)**: This is a 2-lane section with 12-foot lanes, 4-foot shoulders on both sides, and concrete parapet barriers with steel handrails on the edges of the structure. The overall width of this structure is 35 feet - 4 inches.
- **Southbound Selmon Expressway Over Dale Mabry Highway (Bridge No. 100306)**: This structure begins as a 2-lane section with 12-foot lanes, a 4-foot inside shoulder, an 8-foot outside shoulder, and concrete parapet barriers with steel handrails on the edges of the structure. The structure widens towards the south to provide for an exit ramp just past the end of the structure. The overall width of this structure varies from 39 feet - 4 inches to approximately 58 feet.
- **Northbound Selmon Expressway Over Dale Mabry Highway (Bridge No. 100307)**: This is a 2-lane section with 12-foot lanes, a 4-foot inside shoulder, an 8-foot outside shoulder, and concrete parapet barriers with steel handrails on the edges of the structure. The overall width of this structure is 39 feet - 4 inches.

The present posted speed is 55 mph for both directions on the Selmon Expressway.

Gandy Connector PD&E Study
From the Gandy Bridge to the western terminus of the Selmon Expressway
Hillsborough County, Florida

Figure 1-3: Selmon Expressway Bridges Within Study Limits

TAMPA-HILLSBOROUGH EXPRESSWAY AUTHORITY

1.2.2 Type of Structure and Span Arrangement

- **Southbound Selmon Expressway over Gandy Boulevard (Bridge No. 100304)**: This structure is a 256.5 feet long prestressed concrete structure over a roadway. This structure has four pier supported main spans at lengths of approximately 45, 90.5, 76 and 45 feet. The deck surface is concrete and stormwater drainage is routed along the curb to the bridge ends. The structure crosses Gandy Boulevard at a 34˚ skew.
- **Northbound Selmon Expressway over Gandy Boulevard (Bridge No. 100305)**: This structure is a 245.5 foot long prestressed concrete structure over a roadway. This structure has four pier supported main spans at lengths of approximately 43, 86.5, 73 and 43 feet. There is no wearing surface on top of the concrete deck and stormwater drainage is routed along the curb to the bridge ends. The structure crosses Gandy Boulevard at a 28˚ skew.
- **Southbound Selmon Expressway over Dale Mabry Highway (Bridge No. 100306)**: This structure is a 381 foot long prestressed concrete structure over a roadway. This structure has four pier supported main spans at lengths of approximately 84.5, 106, 106, and 84.5 feet. The bridge deck surface is concrete and stormwater drainage is routed along the curb to the bridge ends. The structure crosses Dale Mabry Highway at a 61˚ skew.
- **Northbound Selmon Expressway over Dale Mabry Highway (Bridge No. 100307):** This structure is a 381 foot long prestressed concrete structure over a roadway. This structure has four pier supported main spans at lengths of 84.5, 106, 106, and 84.5 feet. There is no wearing surface on the bridge so deck surface is concrete and stormwater drainage is routed along the curb to the bridge ends. The structure crosses Dale Mabry Highway at a 61° skew.

1.2.3 Horizontal and Vertical Alignment

- **Selmon Expressway over Gandy Boulevard (Bridge Nos. 100304 & 100305)**: Horizontally, the two structures are straight. However, the structures are skewed as previously noted. Vertically, the structures are located on a 600-foot crest vertical curve, which ascends at a three (3) percent grade and descends at a one (1) percent

grade. The minimum stopping sight distance across this vertical curve meets current FDOT and AASHTO design standards for a design speed of 50 mph.

The horizontal opening for eastbound Gandy Boulevard under these structures is 72.5 feet. The horizontal opening for westbound Gandy Boulevard under these structures is 60.5 feet. This opening width results in a sub-standard horizontal clearance to the bridge piers of approximately eight (8) feet. These piers are protected with w-beam guardrails. The minimum vertical clearance over Gandy Boulevard is 16.27 feet above the travel lanes.

- **Selmon Expressway over Dale Mabry Highway (Bridge Nos. 100306 & 100307)**: Horizontally, the two structures are straight. However, the structures are skewed as previously noted. Vertically, the structures are located on a 600-foot crest vertical curve, which ascends at a one (1) percent grade and descends at a three (3) percent grade. The minimum stopping sight distance across this vertical curve meets current FDOT and AASHTO design standards for a design speed of 50 mph.

  The horizontal opening for northbound and southbound Dale Mabry Highway under these structures is 48.5 feet. The minimum vertical clearance over Dale Mabry Highway is 16.42 feet above the travel lanes.

1.2.4 Current Condition and Year of Construction

The Selmon Expressway Bridges over Gandy Boulevard and Dale Mabry Highway were constructed in 1975. These bridges were given sufficiency ratings ranging from 94.7 to 96.7 after the last inspection in early August of 2007. The Health Indices of these bridges ranges from 86.93 to 87.75 and they do not need to be posted. The inspection reports recommend minor rehabilitation work which included the removal of vegetation growth and sealing of the joints in the concrete slope pavement on bridge numbers 100304, 100306 and 100307. The Northbound Selmon Expressway over Dale Mabry Highway Bridge (100307) is also exhibiting two (2) delaminations in the approach slabs. As is indicated by the high rating factors and small amount of rehabilitation work required,

these bridges are in good condition and have an estimated remaining service life of more than 20 years.

2.0 DESIGN CONTROLS AND STANDARDS

Proposed design criteria are given in **Table 2-1**, along with the applicable standards.

Table 2-1 Recommended Design Criteria

Criteria	Value/Designation	Reference
Functional Classification:		
Gandy Boulevard	Urban Other Principal Arterial	FDOT's SLD Inventory
Elevated Express Lanes	Urban Principal Arterial Other –Freeways & Expressways	Recommended Functional Class
Design Speed:		
Gandy Boulevard		FDOT PPM
Gandy Bridge to Marine Base Access	55 mph	Tables 1.9.1 & 1.9.2
Marine Base Access to Dale Mabry	45 mph	
Elevated Express Lanes	50 mph	
Loop Ramps	20 mph	
Non-Loop Ramps	50 mph	
Lane Width:		
Travel Lanes	12 feet recommended; 11 ft min.*	FDOT PPM, Table 2.1.1
Ramps	15 feet	FDOT PPM, Table 2.1.3
Shoulder Width:		
Bridge		
Outside	10.0 feet	AASHTO Ch. 7, p. 455
Left	4.0 feet	
Roadway (Based on high volume)		
Outside	12.0 feet with 5.0 feet paved	FDOT PPM, Table 2.3.2
Median or Left	8.0 feet with 0 feet paved	
Ramp (Single Lane)		
Outside	6.0 feet with 5.0 feet paved	FDOT PPM, Table 2.3.2
Median or Left	6.0 feet with 2.0 feet paved	
Ramp (Two Lane)		
Outside	10.0 feet with 5.0 feet paved	
Median or Left	6.0 feet with 2.0 feet paved	
Border Width:		
Travel Lane at Curb	12.0 feet* - 14.0 feet	FDOT PPM
Bike Lane or Auxiliary Lane at Curb	10.0 feet* - 12.0 feet	Tables 2.5.1 & 2.5.2
Flush Shoulder	40.0 feet (Design Speed > 45 mph)	
	33.0 feet (Design Speed $\leq$ 45 mph)	
Maximum Horizontal Curvature:		
Roadway		
55 mph	Dc = 6º 30' Rural	FDOT PPM
45 mph	Dc = 10º 15' Rural , Dc = 8º 15' Urban	Table 2.8.3
Ramp		
20 mph	Dc = 79º 30' Rural , Dc = 69º 00' Urban	AASHTO
	Dc = Degree of Curvature	Exhibit 3-16
Superelevation:		
Gandy Boulevard		
Existing Street	5% Maximum Superelevation (Urban)	FDOT PPM
Gandy Bridge to Marine Base Access	10% Maximum Superelevation (Rural)	Section 2.9
Elevated Express Lanes	5% Maximum Superelevation (Urban)	
Ramps	10% Maximum Superelevation (Urban)	
*design variations were approved for these elements for the Gandy reconstruction project. Table Revised 10/19/09		

Design Variation Required

The preferred design of the elevated express lanes will require a *design variation* from the FDOT for the inside shoulder width (this reduction applies between Station 635+50 and Station 725+00). The proposed typical section is a two-lane bridge structure with 12-foot travel lanes, a 10-foot outside shoulder and a 4-foot inside shoulder. The two lanes of the structure are separated with a barrier wall and will essentially function as two single-lane roads connecting to the Selmon Expressway.

FDOT's 2009 *Plans Preparation Manual* (PPM) Volume 1, Chapter 2, Figure 2.0.1 (Partial Bridge Sections) shows 6- foot inside and outside shoulders. The AASHTO 2004 "*Green Book*" (*A Policy On Geometric Design Of Highways And Streets*), Chapter 7, states that normal roadway shoulders should extend across all structures except for long bridges over 200 feet which may have shoulders of 4 feet. Further discussion is provided regarding the left shoulder not being expected to serve as a refuge area like the right shoulder.

The 4-foot left shoulder width for the proposed typical for the elevated express lanes bridge does not meet FDOT criteria shown in the Plans Preparation Manual. It is proposed that the left shoulder width in the proposed typical not follow the current FDOT criteria since AASHTO requirements are met and to minimize the bridge footprint.

The proposed typical section provides a right-side shoulder of sufficient width to accommodate stalled vehicles. Since there is only one travel lane in each direction, a motorist would have no difficulty in moving to either side in the event of a mechanical breakdown. The estimated cost savings in using the 4-foot shoulder instead of the 6-foot shoulder is approximately $ 2.8 million.

3.0 TRAFFIC

Information in this section was summarized from the Design Traffic Technical Memorandum (May 2010, HNTB).

3.1 EXISTING TRAFFIC VOLUMES

Due to the current construction along the Gandy Boulevard corridor, traffic count information was collected from a variety of sources (in lieu of collecting new traffic counts), including:

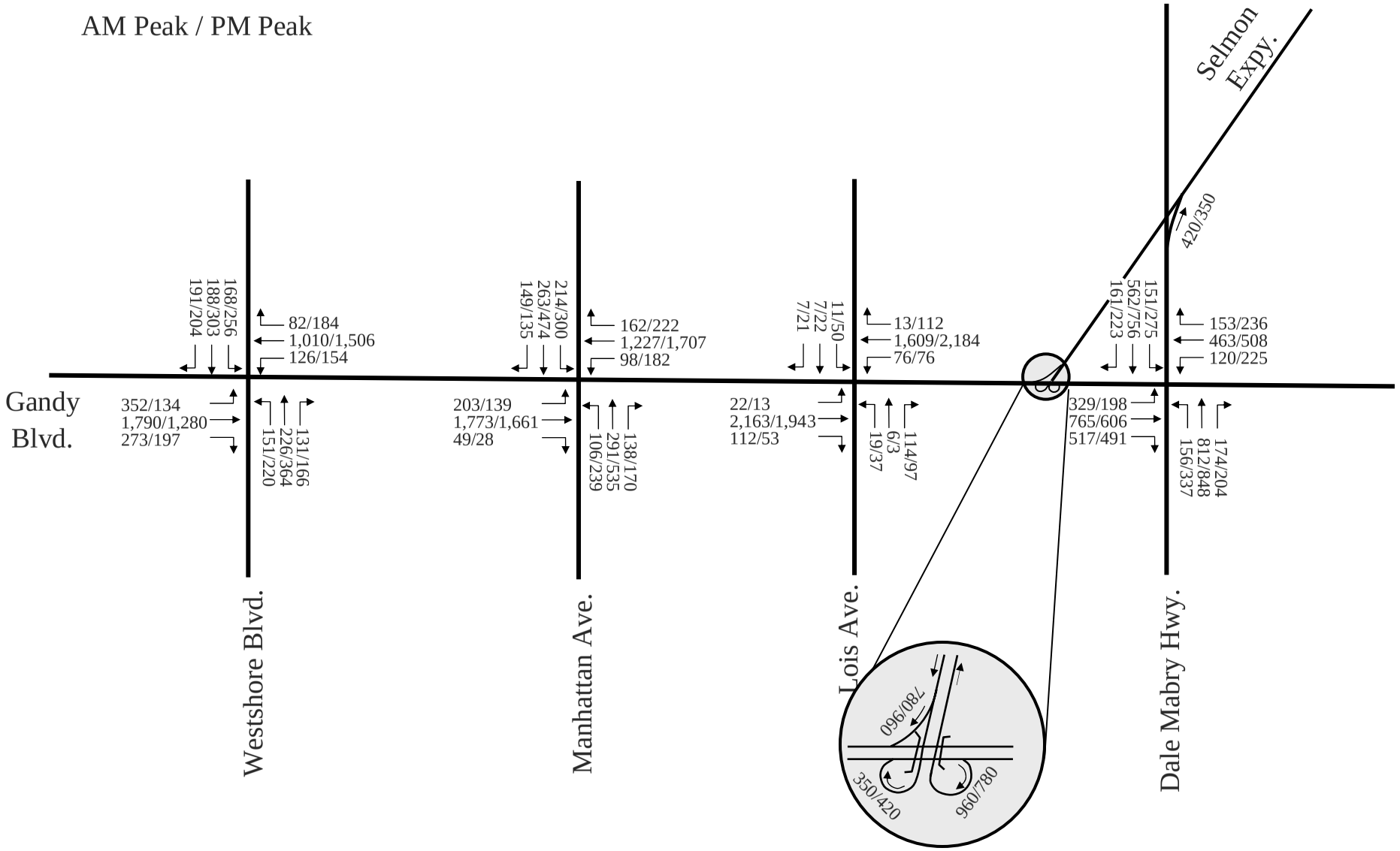
- Final Traffic Memorandum SR 600 (Gandy Connector) prepared by HW Lochner, October 2002
- Gandy Area Transportation Study by Tindale-Oliver & Associates, January 2007
- City of Tampa Traffic Count Program
- FDOT 2007 Florida Traffic Information CD

The traffic count data was adjusted and updated to reflect 2007 year conditions, considered as the "base year" for this analysis. The results of the adjusted AM and PM peak-hour turning movement counts are shown in **Figure 3-1**.

3.2 MULTIMODAL TRANSPORTATION SYSTEM CONSIDERATIONS

Pinellas Suncoast Transit Authority (PSTA) provides an express bus route (No. 100X) that runs east-west from Gateway Mall in Pinellas County to the North Terminal (in downtown Tampa) in Hillsborough County. This bus uses Gandy Boulevard between the Gandy Bridge and Dale Mabry Highway for a portion of the route but makes no stops in the study area. With typical 30-minute headways during morning and afternoon peak periods, it provides direct access to residents between the two counties.

Hillsborough Area Regional Transit Authority (HART) has several bus routes that cross Gandy Boulevard in the study corridor. However, there is no regular local transit route that runs along Gandy Boulevard in the study corridor. Route 36 runs north-south along Dale Mabry Highway and Route 19 runs north-south along Westshore Boulevard and Manhattan Avenue. Route 36 provides local service from MacDill Air Force Base to



Rev. 11/24/09

Figure No:

3-1

BASE YEAR (2007) PEAK HOUR TURNING MOVEMENT VOLUMES

Gandy Connector

downtown Tampa and north to Carrollwood. Route 19 provides local service from downtown Tampa to the Port of Tampa.

3.3 EXISTING CAPACITY/LEVEL OF SERVICE ANALYSIS

Intersection analyses were conducted utilizing the Highway Capacity Software (HCS) 2000, and the arterial level of service (LOS) for Gandy Boulevard was estimated using the FDOT's ARTPLAN software. A summary of the HCS LOS analysis for the four signalized intersections is included in **Table 3-1**. All four intersections were operating at an overall LOS E or F during both or one of the AM and PM peak hours.

Table 3-1 Base Year (2007) Intersection Levels of Service

Intersection	Year 2007			
	AM		PM	
	Intersection Delay (Sec/veh)	LOS	Intersection Delay (Sec/veh)	LOS
Gandy Blvd and Westshore Blvd	145	F	120	F
Gandy Blvd and Manhattan Ave	113	F	172	F
Gandy Blvd and Lois Ave	53	D	59	E
Gandy Blvd and Dale Mabry Highway	103	F	91	F

The arterial segment LOS analysis conducted along Gandy Boulevard between Westshore Boulevard and Dale Mabry Highway is summarized in **Table 3-2**. Note that the entire arterial from Westshore Boulevard to Dale Mabry Highway operates at an overall average LOS F during the AM and PM peak hour in both directions.

Table 3-2 Base Year (2007) Arterial Segment Levels of Service

Gandy Blvd. Arterial Segment Between	AM Peak Hour LOS		PM Peak Hour LOS	
	EB	WB	EB	WB
Westshore Blvd. and Manhattan Ave.	F	F	F	F
Manhattan Ave. and Lois Ave.	F	F	E	F
Lois Ave. and Dale Mabry Hwy.	F	C	F	D
Overall Arterial Segment	**F**	**F**	**F**	**F**

3.4 TRAFFIC DESIGN PARAMETERS

Once the future AADTs are developed for the study area roadways, K_{30} and D_{30} (K and D) factors are used to estimate the design hour volumes. Design Traffic Parameters are applied to the 20-year Design Corridor System Traffic with K_{30}, D_{30} & T Factors produced for the original Gandy Boulevard PD&E Study *Final Traffic Technical Memorandum* dated October 2002. The design year K_{30}, D_{30}, and T factors used in the previous report were estimated based on the procedure outlined in the FDOT's Design Traffic Handbook, dated March 1997. These estimated factors were approved by the FDOT District office. Following are the approved K, D, and T factors for the design year conditions.

- K = 10%
- D = 54.6%
- T = 5.9% for non-controlled access roadways
- T = 9.1% for controlled access roadways

The traffic analysis years for the proposed project are:

- Base Year: 2007
- Opening Year: 2015
- Interim Year: 2025
- Design Year: 2035

3.5 METHODOLOGY FOR DEVELOPMENT OF FUTURE TRAFFIC

The development of future traffic projections for the Gandy Connector project required the examination of historical growth, proposed development levels within the corridor vicinity, and a basic understanding of local traffic circulation patterns and travel characteristics of the corridor.

The traffic model used for this study to forecast future travel demand is the Tampa Bay Regional Planning Model Version 6.1 (TBRPM V6.1) released in March, 2008. This model incorporates the latest adopted Long Range Transportation Plan (LRTP) projects included in the study area. The model was validated for the Gandy Boulevard study area using a base year of 2000. Refinement to the year 2000 highway network and land use datasets were made based on the 2007 *Gandy Area Transportation Study* by Tindale-Oliver & Associates for the City of Tampa. Refinements included breaking down several large traffic analysis zones into multiple smaller zones.

In addition to the planned LRTP improvements, the following roadway capacity projects are scheduled for the Gandy Boulevard Study Area:

- Manhattan Avenue 4-Lane Widening Project from Gandy Boulevard to Euclid Avenue
- Reconstruction of Gandy Boulevard from the Gandy Bridge through the Dale Mabry Highway intersection including improvements at several intersections
- Bridge Street Connection as 2-Lane Collector Roadway – No traffic signal or northbound to westbound left turn at Gandy Boulevard intersection.
- Connecting Tyson Avenue from Westshore Boulevard to Manhattan Avenue
- Four-lane Westshore Boulevard from Tyson Avenue to Fair Oaks Avenue
- Adding a southbound lane to Manhattan Avenue from Gandy Boulevard to Tyson Avenue

The model review process for corridor analysis was not complete without a review of the historical traffic growth along the corridor and a review of the baseline future year model

forecasts to ensure that the model will act properly with revised socio-economic activity levels.

Historical Traffic Growth along the Corridor

Based on the historic count information provided by the FDOT, trends analyses were performed for the FDOT count stations, using historic counts taken between 1993 and 2007. Based on this historical data, future growth trends were established by a least squares linear regression of the historic counts. The overall average of the historic trends simple annual growth rates for the study area was 1.92 percent simple growth per year between 2007 and 2035. The low average annual growth rate for the area reflects the already developed land use conditions in the study area as well as the reduced level of service on the primary roadways in the study area.

3.6 YEAR 2035 VOLUMES

Using updated socio-economic data sets and the validated TBRPM (V6.1) model, year 2035 traffic projections were made for two scenarios that assume an elevated Gandy Connector from west of Westshore Boulevard to the Selmon Expressway. **Scenario 1** assumes that the Gandy Connector would bypass the Gandy Boulevard area and connect directly to the Selmon Expressway. **Scenario 2** would provide ramps from Gandy Boulevard to the elevated Gandy Connector in the vicinity of Dale Mabry Highway. Additionally, each scenario was modeled for the following toll structures; No toll, 25 cent toll, and a 50 cent toll. The results of the traffic projections for year 2035 are presented in **Table 3-3**. The modeled results for Scenario 1 are not included here, but they are available in the full traffic report. Since Scenario 2 with the 25 cent toll yields better utilization of the elevated connector, the remainder of this section will only present traffic projections and level of service results for that scenario. The full analysis results are available in the *Design Traffic Technical Memorandum* referenced earlier.

3.7 FUTURE CONDITIONS

3.7.1 No-Build Alternative Projected Traffic Conditions

The year 2035 was selected as the design year for future year traffic analysis. Existing/future traffic volumes for the No-Build Alternative are shown in **Figure 3-2**. The No-Build laneage as shown in **Figure 3-3** has been updated to include the completion of other projects within the study area that will affect the operations of the Gandy Boulevard corridor between Westshore Boulevard and Dale Mabry Highway. For the future link LOS analysis, based on **Table 3-1** of the FDOT 2002 *Quality/Level of Service Handbook*, all links along Gandy Boulevard are expected to operate at LOS F for the No-Build scenario, for years 2015 thru 2035.

No-Build Design Hour Volumes

Design hour volumes (DHV) were estimated from the AADT projections using the K_{30} and D_{30} factors developed previously for the original Gandy Boulevard PD&E Study Traffic Technical Memorandum dated October 2002. These DHVs were then used to estimate the future directional design hour volumes (DDHV) as shown in **Figure 3-4** for the No-Build alternative.

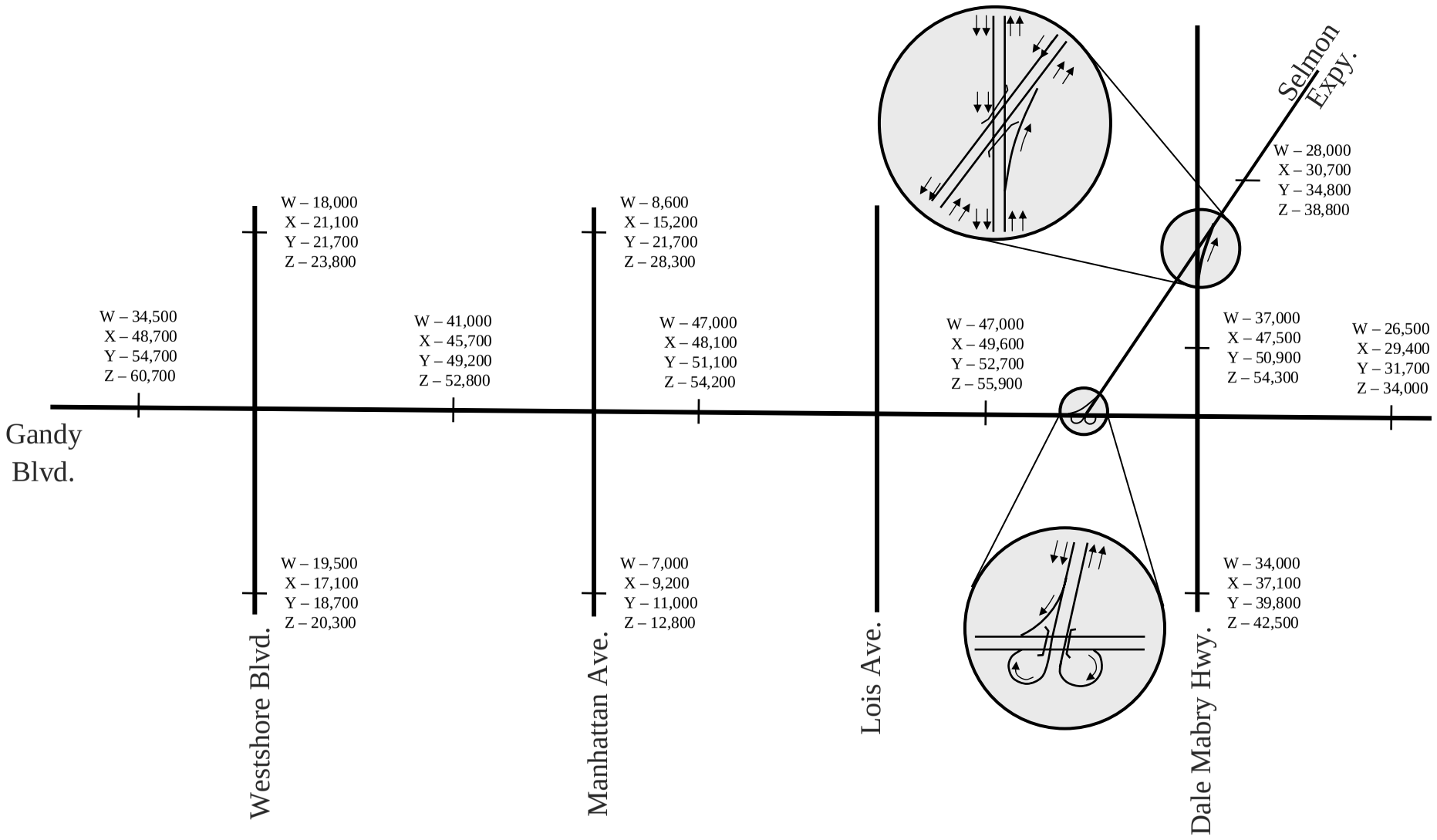


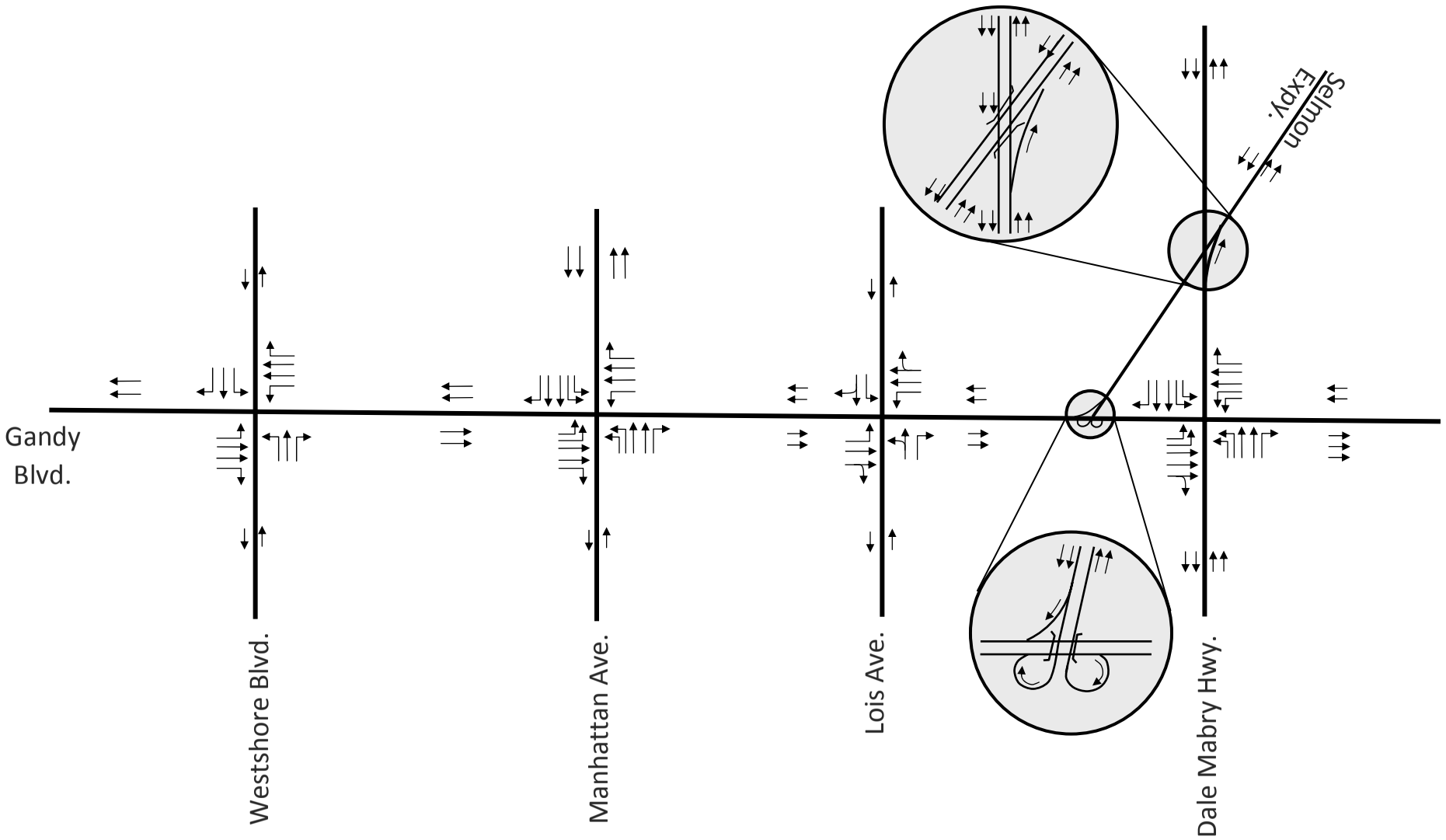
Figure No:

3-2

W - 2007No Build AADT (Estimated)
X - 2015 No Build AADT (Estimated)
Y - 2025 No Build AADT (Estimated)
Z - 2035 No Build AADT (Estimated)

NO BUILD AADT

Gandy Connector



Rev. 6/11/09

Figure No:

3-3

NO BUILD GEOMETRY

Gandy Connector

Table 3-3 Projected 2035 Traffic Volumes

				2035 Annual Average Daily Traffic (AADT)					
Street	Segment	2007	2035 No-Build	Alt. 2 (Without Toll)		Alt. 2 --- 25 Cents		Alt. 2 --- 50 Cents	
Gandy Blvd	Bridge to Westshore Blvd	34,500	60,700	36,500		43,300		51,200	
Gandy Blvd	Westshore Blvd to Manhattan Ave	41,000	55,000	35,900		40,300		46,250	
Gandy Blvd	Manhattan Ave to Lois Ave	47,000	54,200	38,400		40,800		46,100	
Gandy Blvd	Lois Ave to Dale Mabry Hwy	47,000	55,900	37,300		43,800		49,400	
Gandy Blvd	Dale Mabry Hwy to MacDill Ave	26,500	34,000	36,400		36,500		35,000	
Gandy Connector*	Bridge St to Dale Mabry Hwy	n/a	n/a	32,000		23,500		14,100	
				To Gandy	To Selmon	To Gandy	To Selmon	To Gandy	To Selmon
				4,900	27,100	2,400	21,100	1,100	13,000
Selmon Expressway	Dale Mabry Hwy to Euclid Ave	28,000	38,800	50,500		46,900		45,100	
Westshore Blvd	Bay Ave to Gandy Blvd	19,500	20,300	20,400		20,500		21,200	
Westshore Blvd	Gandy Blvd to Euclid Ave	18,000	23,800	21,000		21,100		22,500	
Manhattan Ave	Bay Ave to Gandy Blvd	7,000	12,800	12,500		13,600		13,200	
Manhattan Ave	Gandy Blvd to Euclid Ave	8,600	28,300	26,800		27,500		27,300	
Dale Mabry Hwy	Bay Ave to Gandy Blvd	40,000	42,500	41,600		41,700		42,400	
Dale Mabry Hwy	Gandy Blvd to Expressway	37,000	54,300	51,600		53,300		53,400	
Dale Mabry Hwy	Expressway to Euclid Ave	38,000	40,800	41,700		40,800		40,200	

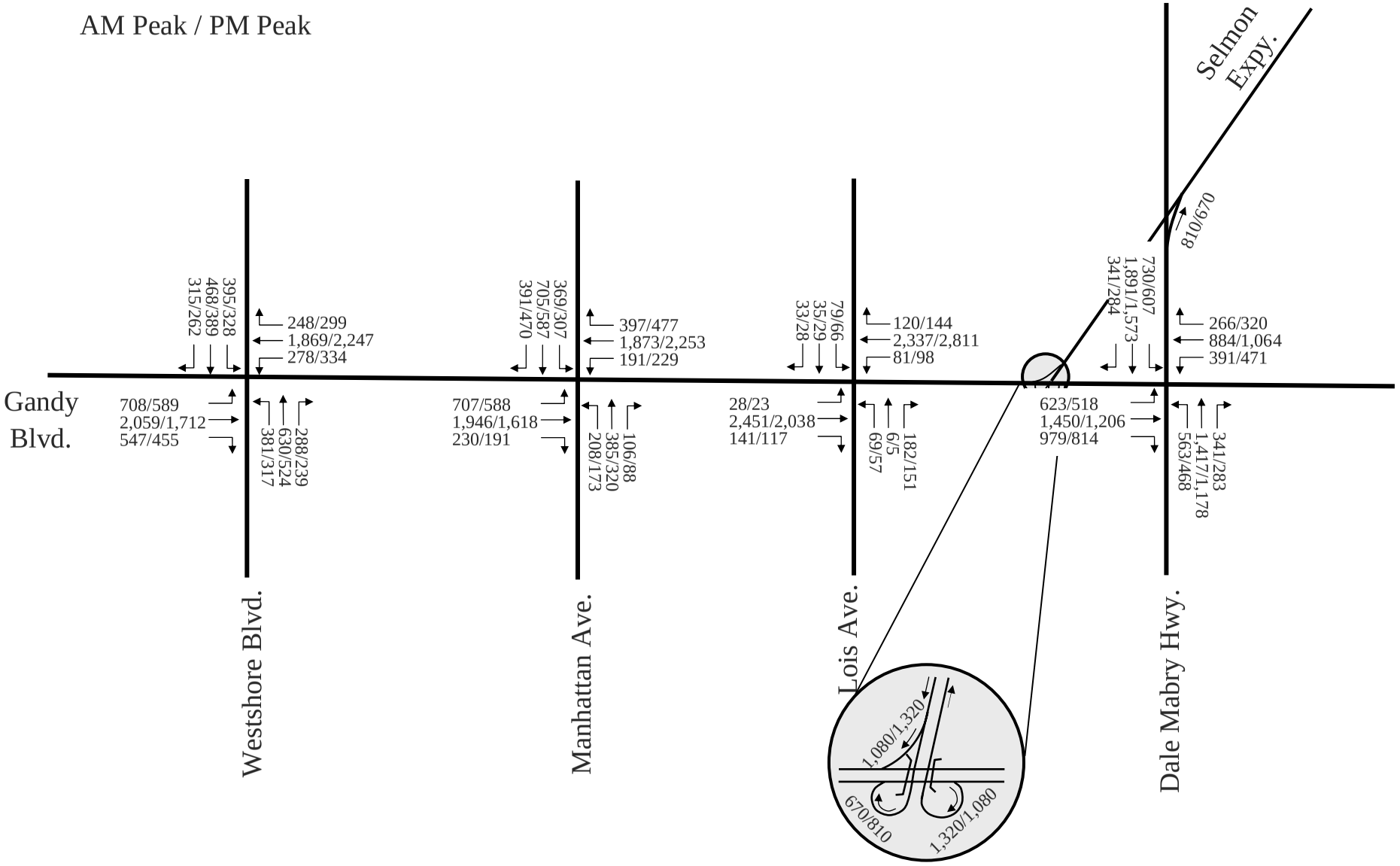
Alternative 2 - Access to Gandy Boulevard near Dale Mabry Highway

*Elevated Express Lanes

Legend:

182 / 227

AM Peak / PM Peak



Rev. 7/24/09

Figure No: 3-4

DESIGN YEAR (2035) NO BUILD
PEAK HOUR TURNING MOVEMENT VOLUMES
Gandy Connector

Future No-Build Peak Hour Operational Analysis

Intersection and arterial operational LOS analyses were conducted utilizing the Highway Capacity Manual software (HCMS 2000) for the future design hour (AM and PM) conditions developed by FDOT. The results of the LOS analyses of intersections are summarized in **Table 3-4**.

Table 3-4 No-Build Alternative Intersection Levels of Service

Intersection	Year 2035			
	AM		PM	
	Intersection Delay (Sec/veh)	LOS	Intersection Delay (Sec/veh)	LOS
Gandy Blvd and Westshore Blvd	384	F	324	F
Gandy Blvd and Manhattan Ave	190	F	181	F
Gandy Blvd and Lois Ave	148	E	138	F
Gandy Blvd and Dale Mabry Highway	331	F	236	F

Arterial segment LOS analyses for the No-Build Alternative were conducted using ARTPLAN, a software program. The results are summarized in **Table 3-5** for the design year 2035.

Table 3-5 No-Build Alternative Arterial Levels of Service

Gandy Blvd. Arterial Segment Between	AM Peak Hour LOS		PM Peak Hour LOS	
	EB	WB	EB	WB
	Year 2035			
Westshore Blvd. and Manhattan Ave.	F	F	F	F
Manhattan Ave. and Lois Ave.	F	F	F	F
Lois Ave. and Dale Mabry Hwy.	F	F	F	F
Overall Arterial Segment	**F**	**F**	**F**	**F**

The arterial LOS analysis indicates that, under the existing conditions, the entire Gandy Boulevard arterial segment from Westshore Boulevard to Dale Mabry Highway will operate at an overall average LOS F during the AM and PM peak hour in both directions.

3.7.2 Build Alternative Projected Traffic Conditions

The "Build" alternative evaluated is an elevated two-lane expressway that extends the 4-lane Selmon Expressway from its existing terminus with Gandy Boulevard on a new elevated structure along Gandy Boulevard to a point on Gandy Boulevard west of Westshore Boulevard and east of the Gandy Bridge. Additional ramps would be constructed along Gandy Boulevard and Dale Mabry Highway to provide access to the elevated lanes. The lane arrangement and the intersection layouts for this Build alternative are illustrated in **Figure 3-5**. The year 2035 AADT volumes for the Build alternative are shown on **Figure 3-6**.

For the elevated express lanes, their capacity is expected to be constrained by the "ramp" merge and diverge conditions at each end of the elevated structure. The merge and diverge movements at the west end of the project do not occur on the elevated structure but on an *arterial facility* (Gandy Boulevard), which is not typically analyzed using this methodology. The analysis was performed for the year 2035 Design Year. The results of this analysis, presented in **Table 3-6**, show all of the potentially conflicting locations operating at LOS "C" or better.

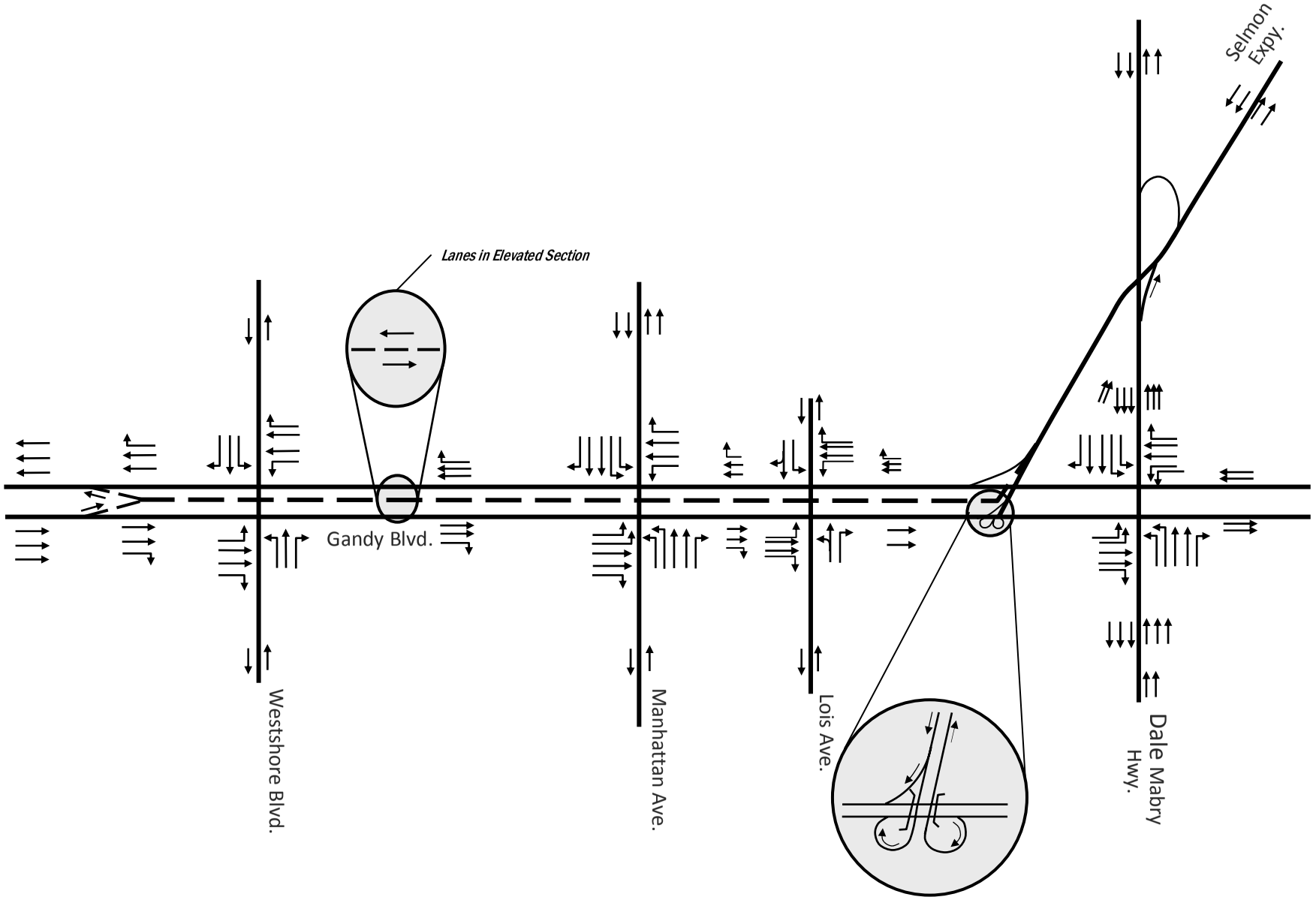
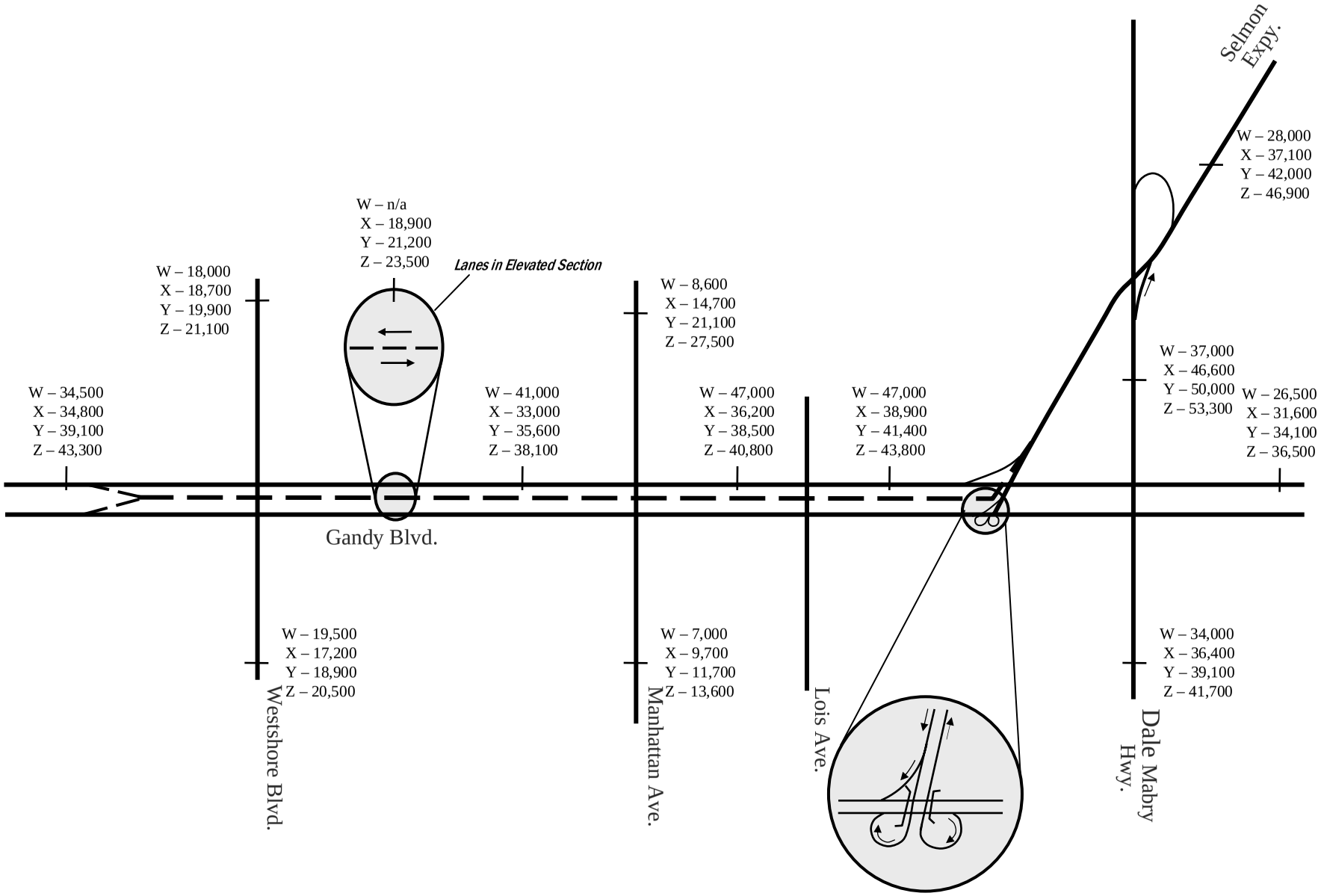


Figure No:

3-5

Rev. 6/11/09

BUILD GEOMETRY
ELEVATED GANDY CONNECTOR
Gandy Connector



Rev. 7/24/09

Figure No:

3-6

W - 2007No Build AADT (Estimated)
X - 2015 No Build AADT (Estimated)
Y - 2025 No Build AADT (Estimated)
Z - 2035 No Build AADT (Estimated)

BUILD AADT

Gandy Connector

Table 3-6 Ramp Merge/Diverge Levels of Service

	AM (LOS) (pc/mi/ln)	PM (LOS) (pc/mi/ln)
West End – Elevated Lanes WB Off Ramp to Gandy Blvd Bridge	C D_R = 26.3	C D_R = 27.7
West End – Elevated Lanes EB On Ramp from Gandy Blvd Bridge	B D_R = 17.7	B D_R = 14.4
East End – Lee Roy Selmon/Elevated Lanes WB Off Ramp to Gandy Blvd	B D_R = 19.1	B D_R = 15.6
East End – Lee Roy Selmon/Elevated Lanes EB On Ramp from Gandy Blvd	B D_R = 15.2	B D_R = 12.8

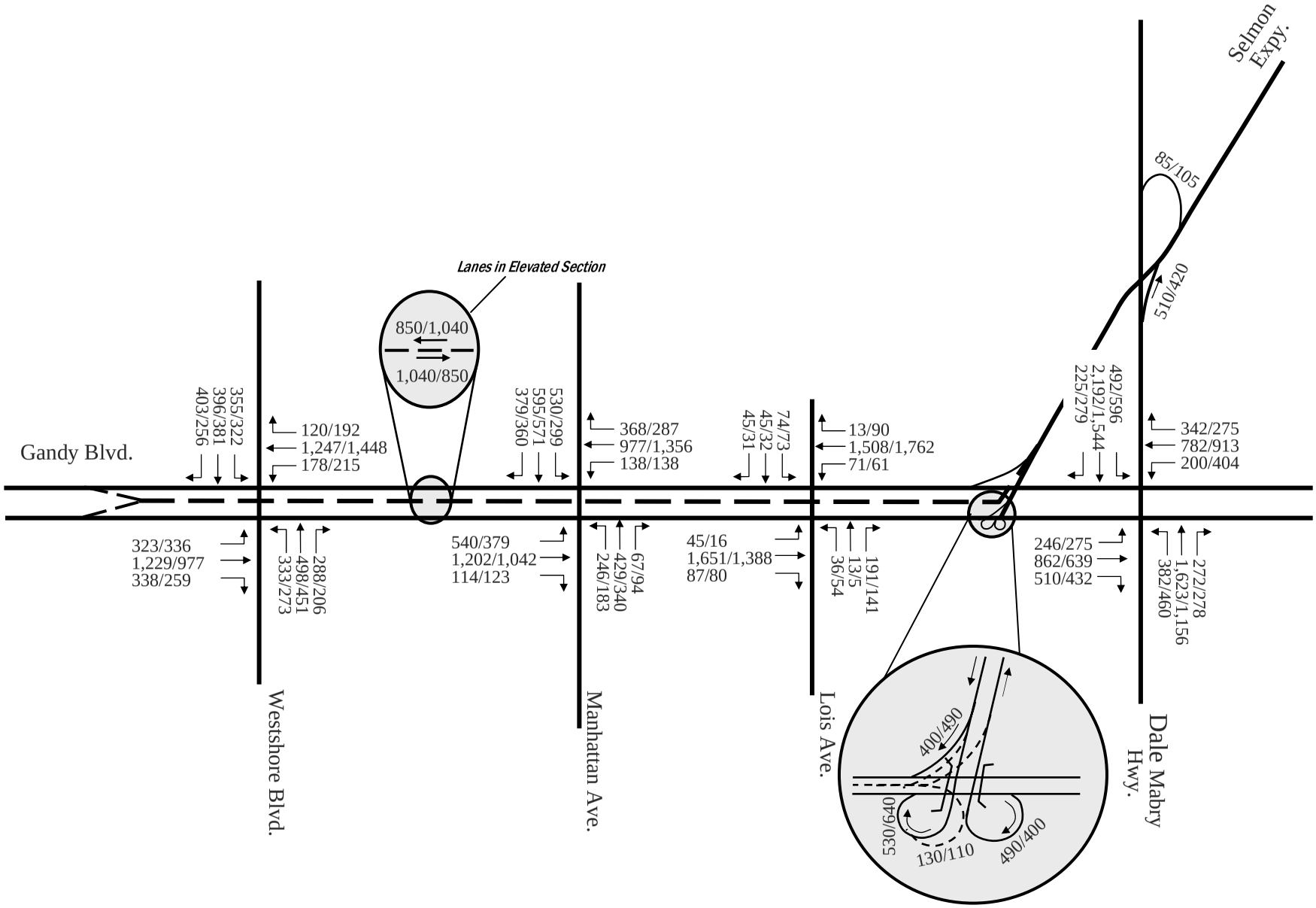
Legend: D_R = Traffic Density on the Ramp

Build Alternative Design Hour Volumes

Design hour volumes for the Build Alternative were estimated from the AADT projections using the K_{30} and D_{30} factors developed previously for the original Gandy Boulevard PD&E Study Traffic Technical Memorandum dated October 2002. These design hour volumes were then used to estimate the future directional design hour volumes shown in **Figure 3-7**.

Build Alternative Peak Hour Operational Analysis

Intersection and arterial operational analyses were conducted utilizing the HCMS 2000 for the future design hour conditions. The results of the LOS analyses of intersections are summarized in **Table 3-7**.



Rev. 11/24/09	Figure No: 3-7	***DESIGN YEAR (2035) BUILD PEAK HOUR TURNING MOVEMENT VOLUMES*** ***Gandy Connector***

Table 3-7 Build Alternative Intersection Levels of Service for Year 2035

Intersection	AM		PM	
	Intersection Delay (Sec/veh)	LOS	Intersection Delay (Sec/veh)	LOS
Gandy Blvd and Westshore Blvd*	183	F	171	F
Gandy Blvd and Manhattan Ave*	122	F	71	E
Gandy Blvd and Lois Ave	33	C	31	C
Gandy Blvd and Dale Mabry Highway	251	F	151	F

*As signalized intersections

Future Build Arterial Capacity Analysis

Arterial segment LOS analyses along Gandy Boulevard for the Build Alternative were conducted using FDOT's ARTPLAN software; the results are summarized in **Table 3-8**.

Table 3-8 Build Alternative Arterial Levels of Service for Year 2035

Gandy Blvd. Arterial Segment Between	AM Peak Hour LOS		PM Peak Hour LOS	
	EB	WB	EB	WB
Westshore Blvd. and Manhattan Ave.	D	D	D	F
Manhattan Ave. and Lois Ave.	E	F	E	F
Lois Ave. and Dale Mabry Hwy.	F	C	F	C
Overall Arterial Segment	**F**	**D**	**F**	**F**

Summary of Operational Analyses

Design hour traffic operational analyses were performed for the No-Build and Build alternatives along the Gandy Boulevard corridor. Overall highway LOS for the No-Build scenario was found to be LOS F (east and westbound). For the Build alternatives these were not changed significantly. Analysis of the signalized intersections on Gandy Boulevard resulted in LOS F at the major intersections, however as can be seen in **Table 3-9** overall delays at these intersections was greatly reduced under the Build alternative. It was found that regional through traffic is better served with the addition of the elevated express lanes allowing through traffic to bypass the at-grade intersections on Gandy

Boulevard, thereby resulting in reduced delay for the at-grade intersections on Gandy Boulevard.

Table 3-9 No-Build vs. Build Intersection Delay Comparison for Year 2035

Intersection	No-Build Alternative		Build Alternative		
	Avg. AM & PM		Avg. AM & PM		
	Intersection Delay (Sec/veh)	LOS	Intersection Delay (Sec/veh)	LOS	Percent Reduction in Delay
Gandy Blvd and Westshore Blvd*	354	F	177	F	50 %
Gandy Blvd and Manhattan Ave*	186	F	71	E	62 %
Gandy Blvd and Lois Ave	143	F	31	C	78 %
Gandy Blvd and Dale Mabry Highway	284	F	151	F	47 %

*As signalized intersections

3.8 ROUNDABOUT OPERATIONS ANALYSIS

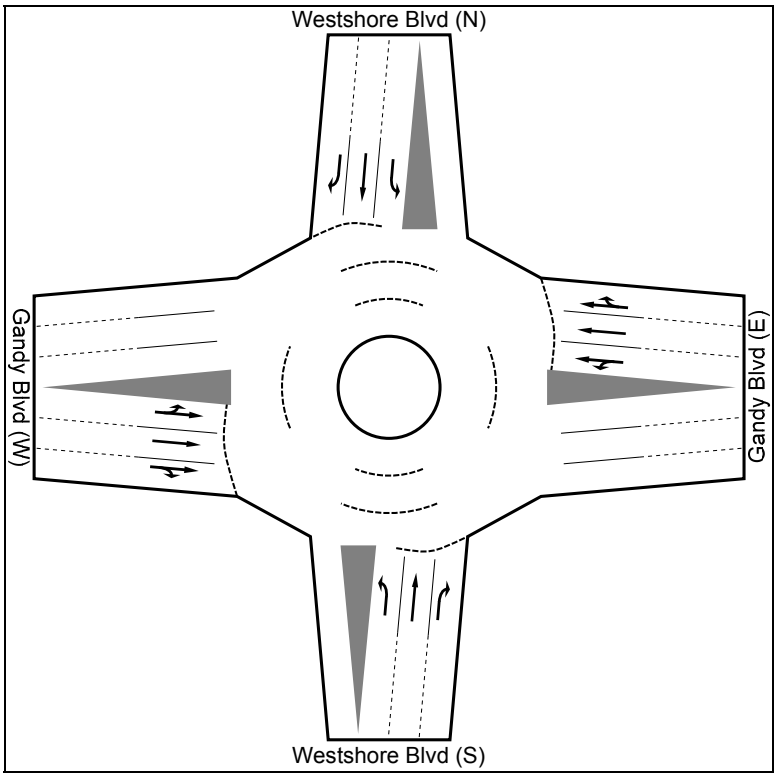
An operational analysis for potential roundabouts at two intersections was conducted to verify the geometric and operational requirements, using the SIDRA program. The analysis was conducted for Gandy Boulevard at Westshore Boulevard and at Manhattan Avenue. *This analysis was conducted prior to the roundabouts being eliminated from further consideration in August 2009 due to opposition from the public and agency staff as well as marginal traffic operational benefits.*

A wide range of lane numbers and lane configurations were tested for roundabouts at each study intersection. Based upon the magnitude of the forecast year volumes, it was identified that three-lane approaches would be required for all approaches at both intersections. Therefore, only one geometric scenario was analyzed for each intersection. Although the total number of entry lanes is the same for both intersections, the lane configurations and number of exit lanes is slightly different.

Gandy Boulevard at Westshore Boulevard Intersection

The intersection layout used in the assessment is illustrated in **Figure 3-8**.

Figure 3-8 Gandy Boulevard at Westshore Boulevard Roundabout



Several different traffic scenarios were analyzed; however, the results presented here are only for the Build Scenario 2 with a 25-cent toll. Information for all scenarios analyzed is included in the *Design Traffic Technical Memorandum*. The results for this scenario for this intersection are shown in **Table 3-10**.

Table 3-10 Alternative 2 – 25-Cent Toll Scenario (Westshore Blvd)

Performance Measure	Alternative 2 25-Cent Toll - AM Peak Hour			
	NB	WB	SB	EB
Number of Lanes (Entry/Exit)	3 / 1	3 / 3	3 / 1	3 / 3
Assumed Entry Configuration	L | TH | R	L-TH | TH | TH-R	L | TH | R	L-TH | TH |TH-R
V/C Ratio	**1.29**	0.73	**1.06**	0.82
Average Control Delay (sec/veh)	123	13	44	13
Overall Intersection Delay (sec/veh)	41			
95th Percentile Queue (ft)	1298	226	557	276
Performance Measure	**Alternative 2 25-Cent Toll - PM Peak Hour**			
	NB	**WB**	**SB**	**EB**
Number of Lanes (Entry/Exit)	3 / 1	3 / 3	3 / 1	3 / 3
Assumed Entry Configuration	L | TH | R	L-TH | TH | TH-R	L | TH | R	L-TH | TH |TH-R
V/C Ratio	0.88	**0.92**	**1.12**	0.67
Average Control Delay (sec/veh)	21	25	63	11
Overall Intersection Delay (sec/veh)	27			
95th Percentile Queue (ft)	284	461	611	182

Notes: **Bold** indicates v/c ratios exceeding recommended thresholds
L: Left-turn lane
R: Right-turn lane
TH: Through lane
L-TH: Shared left and a through lane
R-TH: Share right and a through lane

Under the 25-cent toll scenarios, both minor street approaches are expected to have over-capacity operations during the peak hours; however the Gandy Boulevard approaches are expected to continue to operate acceptably under Alternative 2.

Gandy Boulevard and Manhattan Avenue Intersection

The intersection layout used in the assessment is illustrated in **Figure 3-9.**

Figure 3-9 Gandy Boulevard at Manhattan Avenue Roundabout

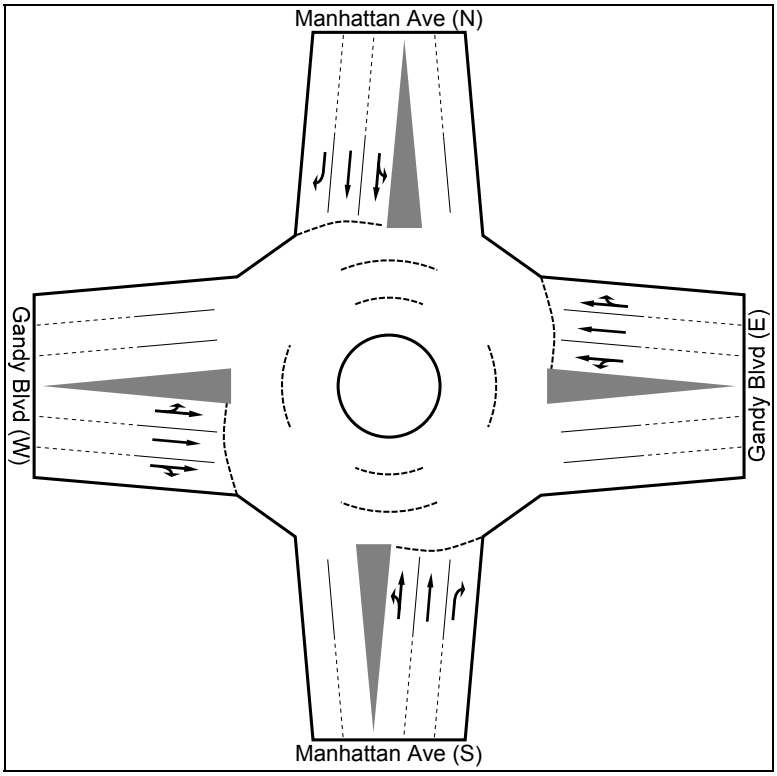


Table 3-11 presents the output of the SIDRA Intersection analysis of the Gandy Boulevard and Manhattan Avenue intersection for the same scenario.

Table 3-11 Alternative 2 – 25-Cent Toll Scenario (Manhattan Ave)

Performance Measure	Alternative 2 25-Cent Toll - AM Peak Hour			
	NB	WB	SB	EB
Number of Lanes (Entry/Exit)	3 / 2	3 / 3	3 / 2	3 / 3
Assumed Entry Configuration	L-TH | TH | R	L-TH | TH |TH-R	L-TH | TH | R	L-TH | TH |TH-R
V/C Ratio	**1.32**	0.72	**1.09**	**1.02**
Average Control Delay (sec/veh)	173	15	47	42
Overall Intersection Delay (sec/veh)	54			
95th Percentile Queue (ft)	1154	242	758	683
Performance Measure	**Alternative 2 25-Cent Toll - PM Peak Hour**			
	NB	**WB**	**SB**	**EB**
Number of Lanes (Entry/Exit)	3 / 2	3 / 3	3 / 2	3 / 3
Assumed Entry Configuration	L-TH | TH | R	L-TH | TH |TH-R	L-TH | TH | R	L-TH | TH |TH-R
V/C Ratio	0.61	0.75	**1.03**	0.72
Average Control Delay (sec/veh)	15	13	52	12
Overall Intersection Delay (sec/veh)	23			
95th Percentile Queue (ft)	131	250	537	204

Notes: **Bold** indicates v/c ratios exceeding recommended thresholds
L: Left-turn lane
R: Right-turn lane
TH: Through lane
L-TH: Shared left and a through lane
R-TH: Share right and a through lane

For the Manhattan Avenue intersection, under the 25-cent toll scenarios, both minor street approaches are expected to have over-capacity operations during the peak hours and the eastbound movement during the a.m. peak hour is also expected to be slightly over-capacity.

Roundabout Recommendations

As stated earlier, the roundabout analysis was conducted prior to the roundabouts being eliminated from further consideration in August 2009 due to opposition from the public and agency staff as well as marginal traffic operational benefits. No further study of them is proposed at this time.

4.0 CORRIDOR ANALYSIS

Previous studies conducted for the Gandy Boulevard corridor evaluated several alternative corridors in addition to Gandy Boulevard. The text in this section is from the *Gandy Area Transportation Study* (Tindale-Oliver, 2007).

Since the Selmon Expressway was originally conceived, various plans have been put forward to create a limited access connection between the current expressway terminus immediately west of Dale Mabry Highway and the Gandy Bridge. Most recently, FDOT conducted the "Gandy Connector" PD&E study which proposed two alternative freeway alignments:

- Elevated on Gandy Alternative, and
- Bypass Alternative

Both alternatives contemplated a 4-lane freeway which connected the current Selmon Expressway to the Gandy Bridge while leaving Gandy Boulevard and major north-south roads intact. The "Elevated on Gandy" alternative situated the new freeway immediately north of Gandy Boulevard and would have required a right of way taking of approximately 100 feet along most of the corridor thereby removing commercial land uses along this side of the road.

The "Bypass" alternative swept south of Gandy Boulevard between Bridge Street and Westshore Boulevard and then traveled east-west along the Tyson Street corridor which at the time was supplemented by the Manhattan-Phillips tract. This alignment curved back north over the Port Tampa CSX tracks and was to run parallel to the railroad tracks and then over Gandy Boulevard to tie in with the existing expressway. The "Bypass" alternative required right of way takings in the area that has become the Imperial Yachts development and along Westshore Boulevard in the vicinity of Paxton Avenue and Pearl Avenue. This alternative also required taking a substantial portion of the Lighthouse apartment complex located immediately south of the current Selmon Expressway loop ramps.

Both alignments were vigorously protested by local business people and residents and ultimately the PD&E study was suspended and funding was removed from the Gandy Connector by the Hillsborough County MPO. Since the PD&E Study, development of the Imperial Yachts property, the Manhattan-Phillips property, and elsewhere along Westshore Boulevard has made the "Bypass" alternative right of way acquisition cost prohibitive.

A third alternative considered as prior to the PD&E process was to reconstruct Gandy Boulevard as a 6-lane section, however, traffic projections indicated that a 6-lane at grade roadway would operate at LOS "F" upon completion of the roadway widening project and therefore, in the assessment of FDOT, would not create adequate capacity to justify the expense of construction.

5.0 ALTERNATIVES ANALYSIS

5.1 NO-BUILD ALTERNATIVE

The No-Build Alternative provides a baseline from which to measure the performance, costs and impacts of all alternatives. It assumes no capacity improvements would be made to the existing facility. The No-Build Alternative would result in increased congestion producing higher vehicle operating costs and fuel consumption, increased cost of motorist time, and increased air emissions. The No-Build Alternative will remain a viable alternative throughout the duration of the study.

5.2 TRANSPORTATION SYSTEM MANAGEMENT

Transportation System Management (TSM) alternatives include activities designed to maximize the utilization and efficiency of the present system. These activities typically include minor improvements like signal re-timing and adding auxiliary turn lanes, ridesharing, traffic signal timing optimization and designating high occupancy vehicle lanes on existing roadways. The Gandy Boulevard reconstruction project (WPI Segment No. 255822-1, "Aesthetic Enhancements and Operational Improvements") implemented TSM improvements, however; these improvements do not fully satisfy the project need, which is to provide a limited access link between the Gandy Bridge and the Selmon Expressway to separate regional traffic from local traffic and thereby enhance the local roadway while providing enhanced regional mobility and emergency evacuation. Gandy Boulevard reconstruction project (WPI Segment No.: 255822-2) was recently completed in December 2009.

5.3 BUILD ALTERNATIVES INTRODUCTION

In order to provide the needed financing for the project, the City of Tampa and FDOT are partnering with the THEA to consider evaluating whether new lanes could be operated as a toll facility. Because Gandy Boulevard does not exhibit large peak-hour directional variance, a proposal was developed involving an elevated structure with one travel lane in each direction, rather than a 3-lane reversible roadway. As such, it would effectively serve as a very long ramp or 2-lane, 2-way roadway connecting the Gandy Bridge to the Selmon Expressway and would be limited to approximately 24,000 vehicles per day.

This proposed connection is currently referred to as the proposed "Elevated Express Lanes". From previous studies (see Section 4.0) it was determined that any bridge alternative located along Gandy Boulevard that would result in loss of large numbers of business would result in high community impacts and meet stiff community opposition. Therefore, it was determined that the only potentially viable alternative was to position the bridge piers in the median of the existing roadway, to avoid impacts to businesses on Gandy Boulevard. Once it was determined that the bridge would be located in the median, attention was shifted to examining the transitions at each end in addition to evaluating potential surface street impacts, improvements and enhancements.

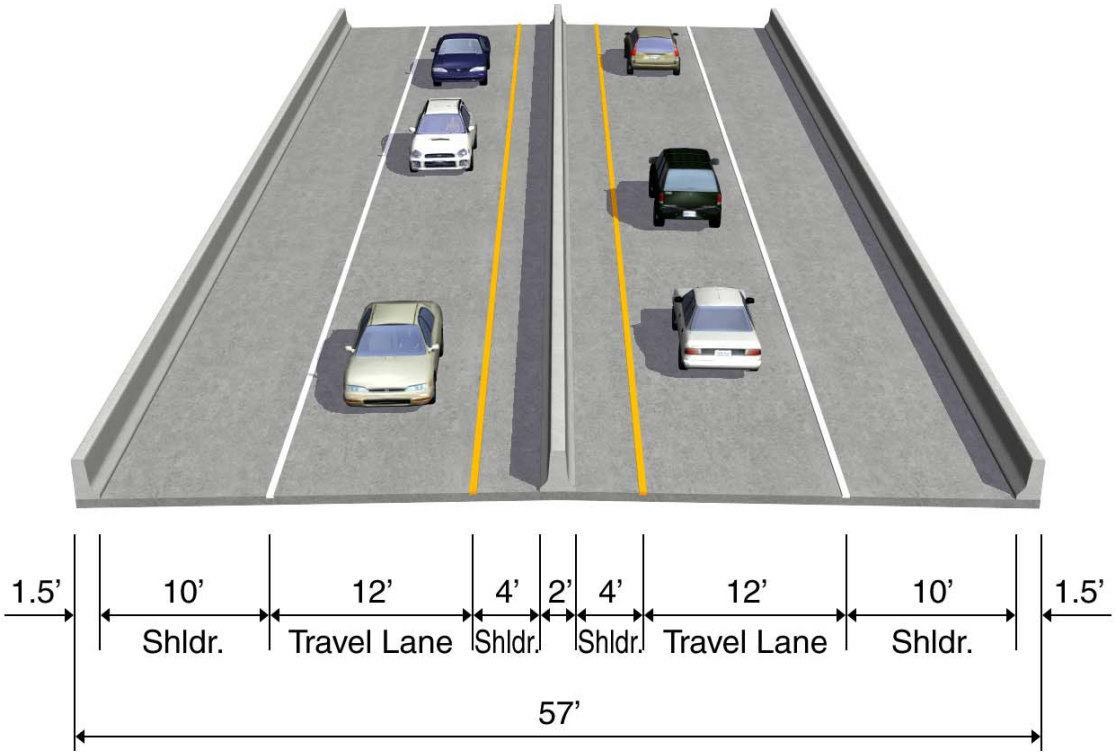
5.4 ELEVATED CONNECTOR TYPICAL SECTIONS

The proposed project will require a new bridge to be constructed above and parallel to the existing Gandy Boulevard. Various typical sections for this elevated structure were considered consisting of variations in the inside and outside shoulder widths. Based on examination of design criteria and discussions with THEA staff, the recommended typical section was determined to consist of a 12-foot traffic lane in each direction separated by a median barrier, with 4-foot inside shoulders and 10-foot outside shoulders. The outside barrier consists of a 32-inch F-shape barrier resulting in a total bridge width of 57 ft -1 inch. The recommended bridge typical section is shown in **Figure 5-1**. Potential structural options for this proposed bridge are discussed in Section 6.14.

5.5 WEST END CAUSEWAY OPTIONS

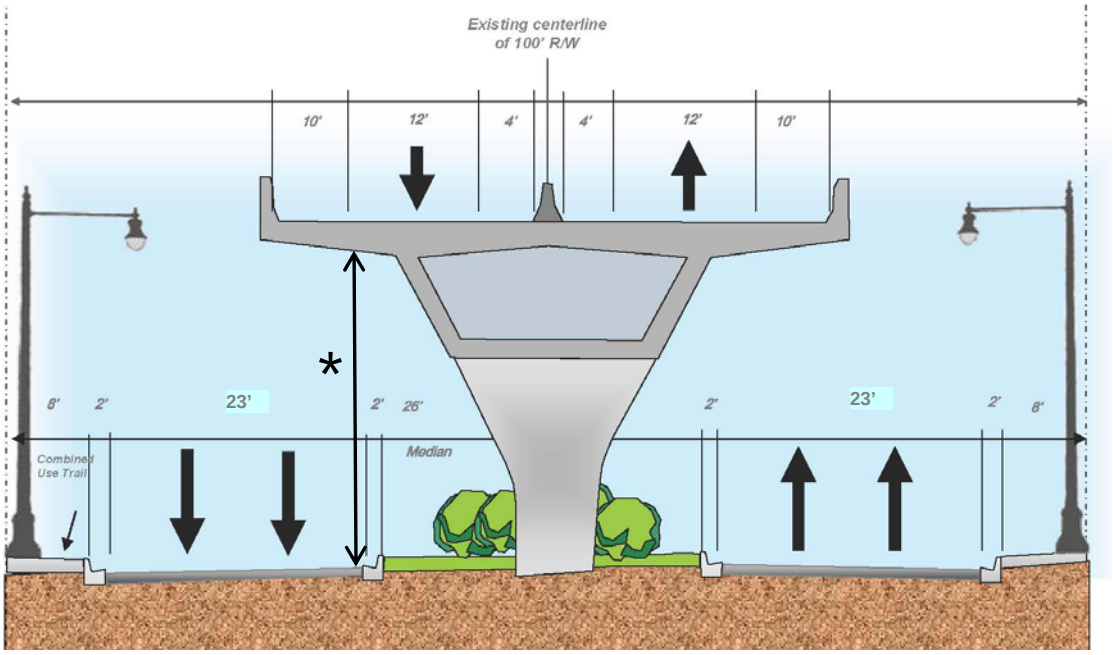
A total of five (5) different alternatives were considered for the at-grade connection on the west end of the Elevated Express Lanes, as shown in **Figures 5-2 thru 5-6**.

Option 1 relocates the current access point to properties north and south of Gandy Boulevard to the east (approximately 650 ft) with an at-grade signalized intersection to serve local traffic. There is one additional access point to the property on the south with right-in and right-out access to Gandy Boulevard. This Option includes the longer version of the Elevated Express Lanes Bridge.



Note: the actual out-to-out dimension would be 57 feet – 1 inch

2 Lane Gandy Single Box



*Vertical clearance = 30’ in most areas; minimum required = 16.5’

Rev. 11/18/2009

Regional Express Lanes Bridge not shown

LEGEND

- PROPOSED ROADWAY
- PROPOSED R/W
- BRIDGE STRUCTURE/ RETAINING WALL
- DIRECTION OF TRAVEL
- PROPOSED SIDEWALK
- EXISTING R/W
- EXISTING PROPERTY LINE
- WETLAND/SURFACE WATERS
- BRIDGE PIER LOCATION
- POTENTIAL BRIDGE PIER LOCATION
- POTENTIAL CONTAMINATION SITE
- POTENTIAL RESIDENTIAL RELOCATION
- POTENTIAL BUSINESS RELOCATION
- DATE OF PHOTOGRAPHY: November, 2006

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GANDY CONNECTOR PD&E STUDY

West End Causeway Option 1

Figure 5-2

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Regional Express Lanes Bridge not shown

LEGEND

- PROPOSED ROADWAY
- PROPOSED R/W
- BRIDGE STRUCTURE/ RETAINING WALL
- DIRECTION OF TRAVEL
- PROPOSED SIDEWALK
- EXISTING R/W
- EXISTING PROPERTY LINE
- WETLAND/SURFACE WATERS
- BRIDGE PIER LOCATION
- POTENTIAL POND SITE
- POTENTIAL CONTAMINATION SITE
- POTENTIAL RESIDENTIAL RELOCATION
- POTENTIAL BUSINESS RELOCATION
- DATE OF PHOTOGRAPHY: November, 2006

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GANDY CONNECTOR PD&E STUDY

West End Causeway Option 2

Figure 5-3

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Regional Express Lanes Bridge not shown

LEGEND

- PROPOSED ROADWAY
- PROPOSED R/W
- BRIDGE STRUCTURE/ RETAINING WALL
- DIRECTION OF TRAVEL
- PROPOSED SIDEWALK
- EXISTING R/W
- EXISTING PROPERTY LINE
- WETLAND/SURFACE WATERS
- BRIDGE PIER LOCATION
- POTENTIAL POND SITE
- POTENTIAL CONTAMINATION SITE
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GANDY CONNECTOR PD&E STUDY

West End Causeway Option 3

Figure 5-4

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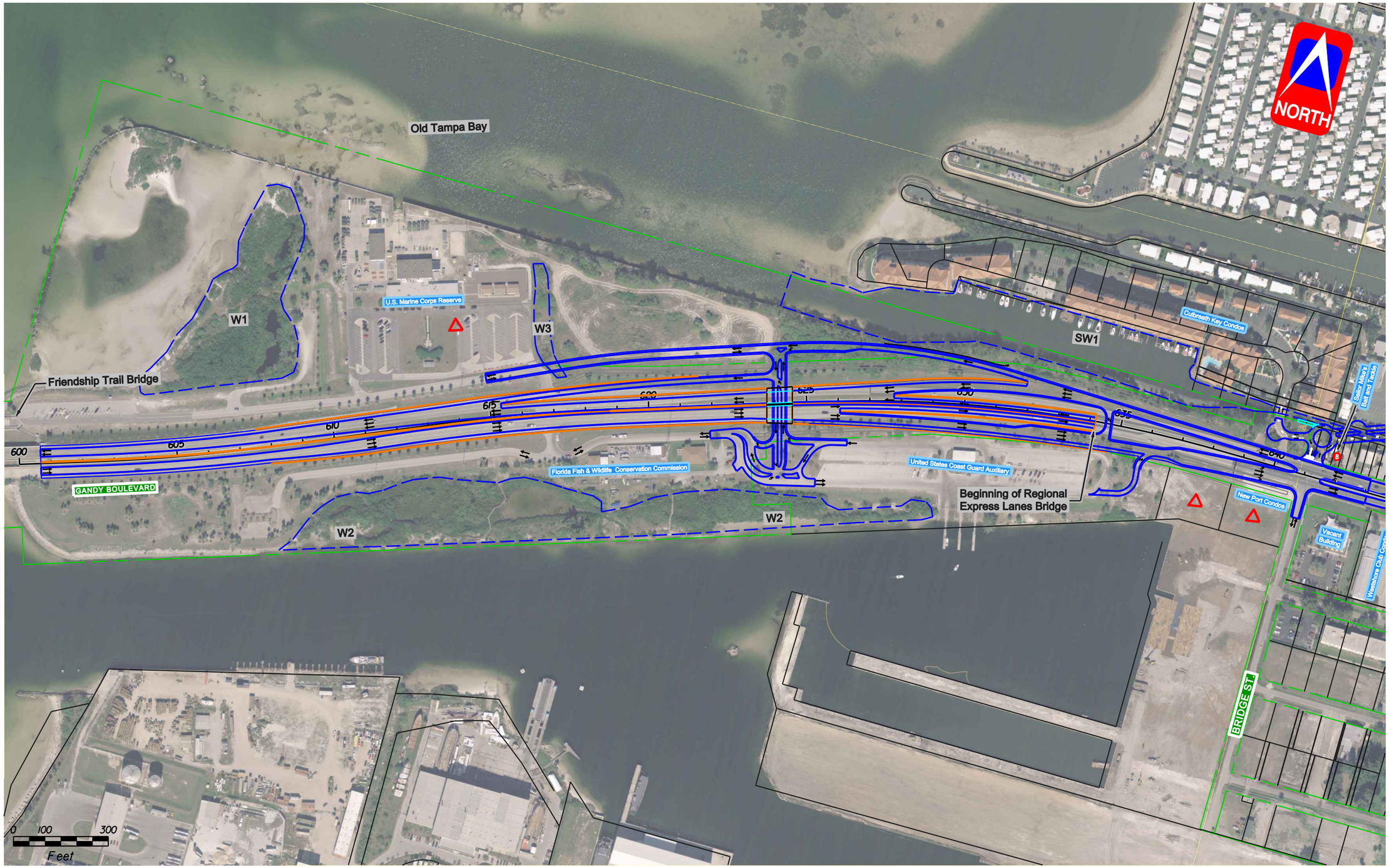

Regional Express Lanes Bridge not shown

LEGEND

- PROPOSED ROADWAY
- PROPOSED R/W
- BRIDGE STRUCTURE/ RETAINING WALL
- DIRECTION OF TRAVEL
- PROPOSED SIDEWALK
- EXISTING R/W
- EXISTING PROPERTY LINE
- WETLAND/SURFACE WATERS
- BRIDGE PIER LOCATION
- POTENTIAL BRIDGE PIER LOCATION
- POTENTIAL CONTAMINATION SITE
- POTENTIAL RESIDENTIAL RELOCATION
- POTENTIAL BUSINESS RELOCATION
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GANDY CONNECTOR PD&E STUDY

West End Causeway Option 4

Figure 5-5

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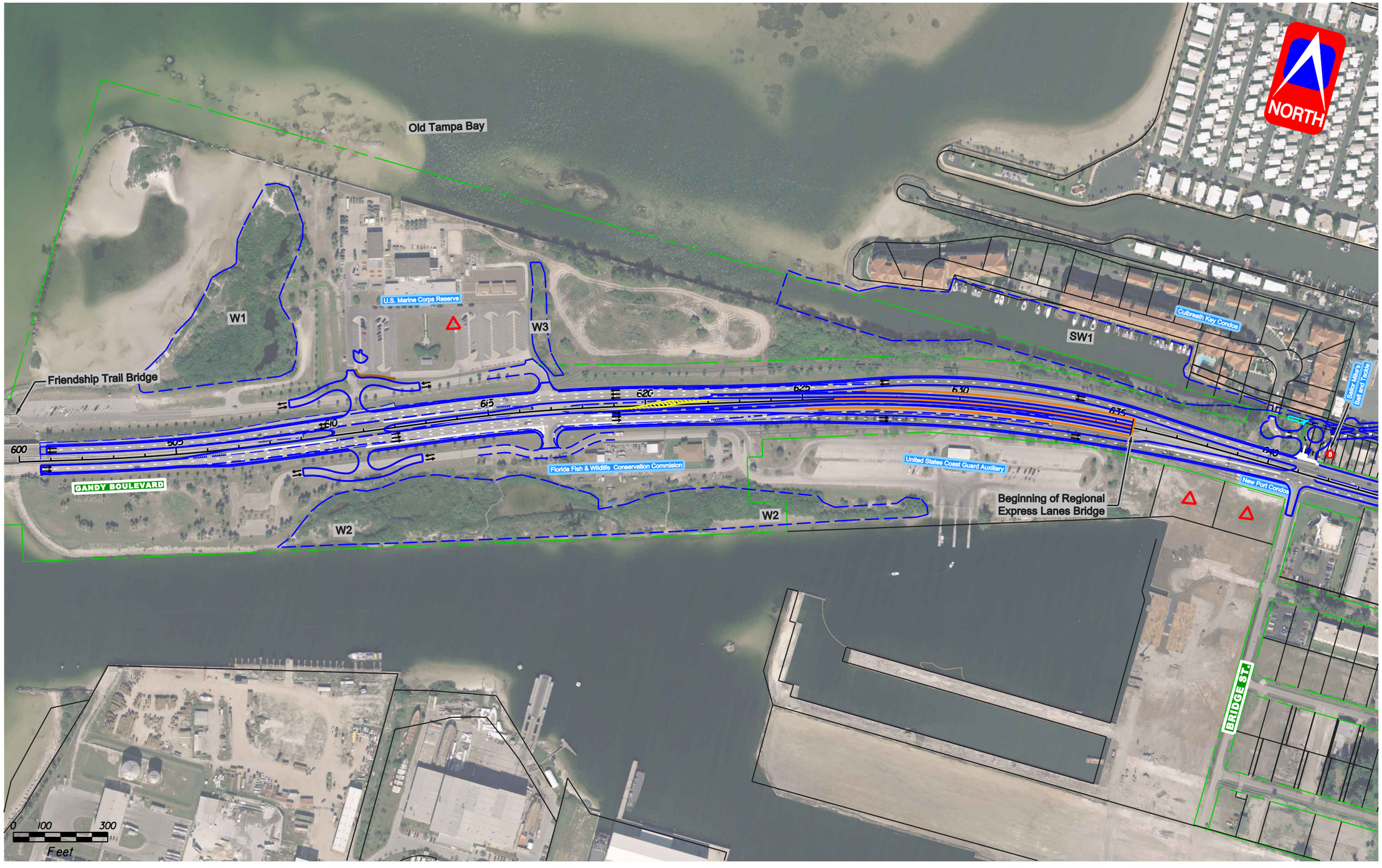

Regional Express Lanes Bridge not shown

LEGEND

- PROPOSED ROADWAY
- PROPOSED R/W
- BRIDGE STRUCTURE/ RETAINING WALL
- DIRECTION OF TRAVEL
- PROPOSED SIDEWALK
- EXISTING R/W
- EXISTING PROPERTY LINE
- WETLAND/SURFACE WATERS
- BRIDGE PIER LOCATION
- POTENTIAL POND SITE
- POTENTIAL CONTAMINATION SITE
- POTENTIAL RESIDENTIAL RELOCATION
- POTENTIAL BUSINESS RELOCATION
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GANDY CONNECTOR PD&E STUDY

West End Causeway Option 5

Figure 5-6

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Option 2 provides local access at existing driveways, west of Option 1. Westbound local Gandy Boulevard traffic would be grade separated while eastbound local traffic would be signal controlled. There is one (1) additional access point to the property on the south with right-in and right-out access to Gandy Boulevard. This Option includes the longer version of the Elevated Express Lanes Bridge.

Option 3 is the same as Option 2 but provides a grade-separated intersection with both the local and express lanes overhead. The local lanes are brought down to the surface while the elevated section continues east. This Option includes the longer version of the Elevated Express Lanes Bridge.

Option 4 is the same as Option 3 except that the grade-separated intersection is moved to the east (approximately 650 feet.) This Option has one additional eastbound exit ramp to local Gandy Boulevard traffic. This Option includes the longer version of the Elevated Express Lanes Bridge.

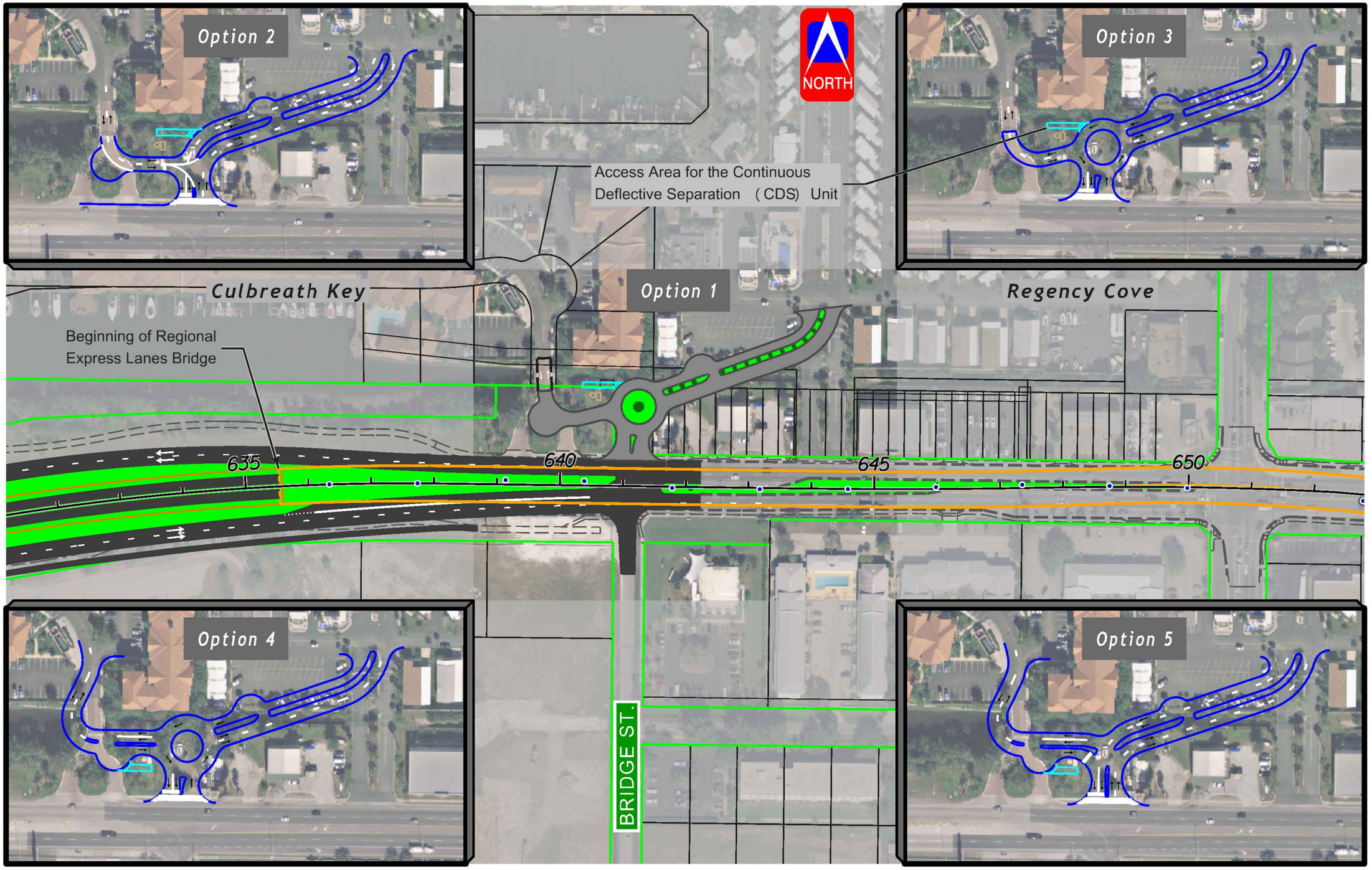
Option 5 relocates the access road to the west (approximately 650 feet) of the existing access points for the properties on the north and south side of Gandy Boulevard. The existing access roads are replaced with right-in and right-out to access Gandy Boulevard. This Option includes the shorter version of the Elevated Express Lanes Bridge and is less costly.

5.6 BRIDGE STREET OPTIONS

The five (5) options evaluated for the Bridge Street area are illustrated in **Figure 5-7.**

Option 5 combines the two developments (Culbreath Key and Regency Cove) driveways to form a single "Y" intersection to the north. This option avoids the CDS unit but the bridge over the canal to Culbreath Key would need to be replaced. The intersection would be aligned with Bridge Street to the south and would be signalized in the future.

Option 4 is the same as Option 5 except the "Y" intersection is replaced with a small traffic circle to the north.



LEGEND

PROPOSED ROADWAY
PROPOSED R/W
BRIDGE STRUCTURE/ RETAINING WALL
DIRECTION OF TRAVEL
PROPOSED SIDEWALK
EXISTING R/W
EXISTING PROPERTY LINE
WETLAND/SURFACE WATERS
BRIDGE PIER LOCATION
POTENTIAL BRIDGE PIER LOCATION
POTENTIAL CONTAMINATION SITE
POTENTIAL RESIDENTIAL RELOCATION
POTENTIAL BUSINESS RELOCATION
DATE OF PHOTOGRAPHY: November, 2006

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GANDY CONNECTOR PD&E STUDY

BRIDGE STREET OPTIONS

Figure 5-7

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Option 3 is the same as Option 4 except that the roadway to Culbreath Key is re-aligned to maintain the existing bridge over the canal. The CDS unit would need to be removed or replaced.

Option 2 is the same as Option 3 except that traffic circle is replaced with a "Y" intersection and a turn around is provided outside the Culbreath Key entrance.

Option 1 is the same as Option 2 except was "Y" intersection is replaced by a traffic circle. This Option would provide the best fit and function for both development entrances.

5.7 WESTSHORE BOULEVARD INTERSECTION OPTIONS

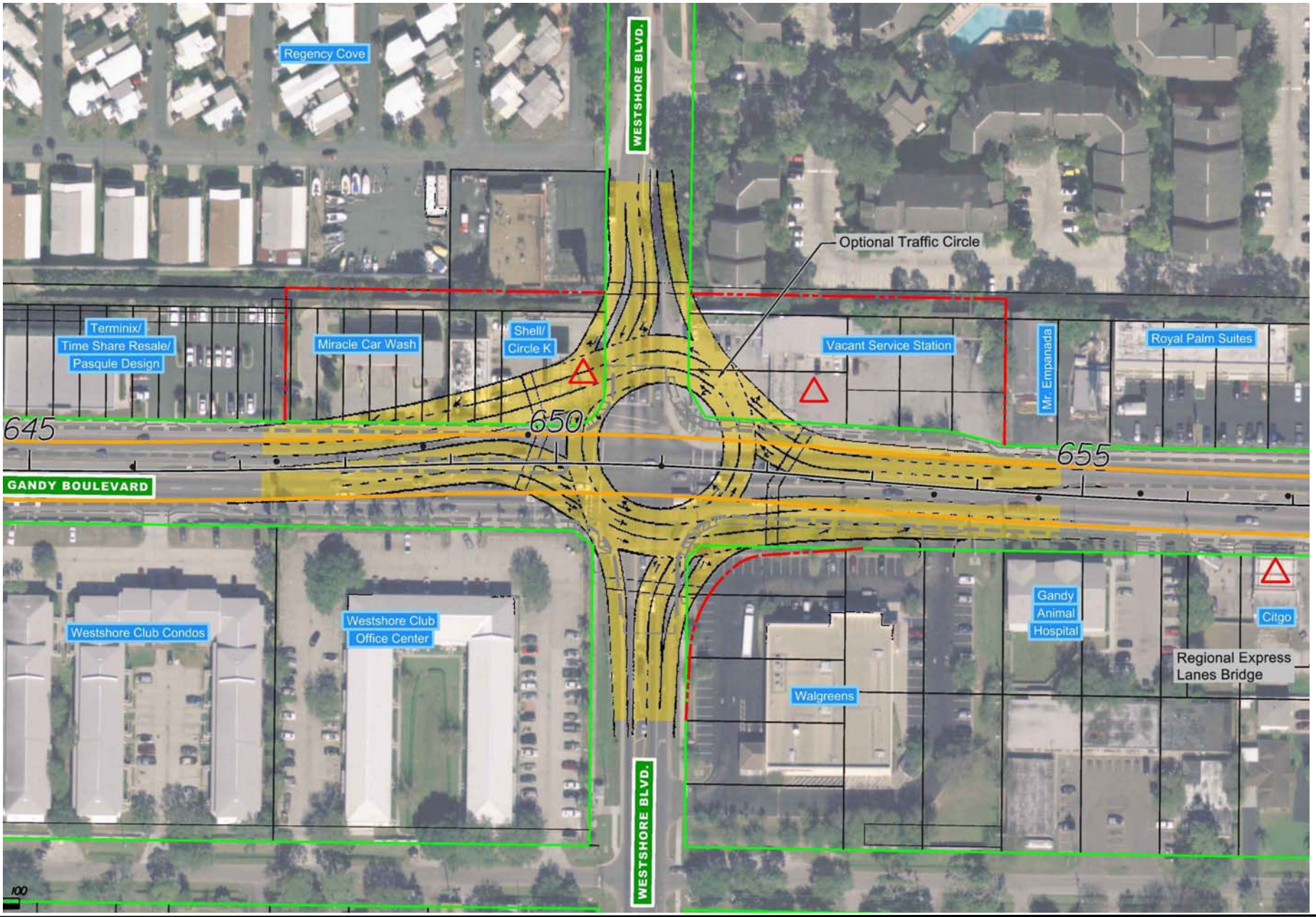
Option 1 retains the existing intersection with exclusive left and right turn lanes on all approaches, two through lanes (EB and WB) on Gandy Boulevard and a single through lane (NB and SB) on Westshore Boulevard.

Option 2 reconfigures the intersection into a 3-lane traffic circle. The three (3) lanes entering the traffic circle in the east-west directions transition back to two (2) lanes east and west of the circle (**Figure 5-8**).

5.8 MANHATTAN AVENUE INTERSECTION OPTIONS

Option 1 retains the existing intersection with two (2) exclusive left lanes, two (2) through lanes with a shared right on the southbound and northbound approaches to Manhattan Avenue; two (2) through lanes, exclusive right turn lanes, two (2) eastbound left turn and one (1) exclusive westbound left turn lane on Gandy Boulevard.

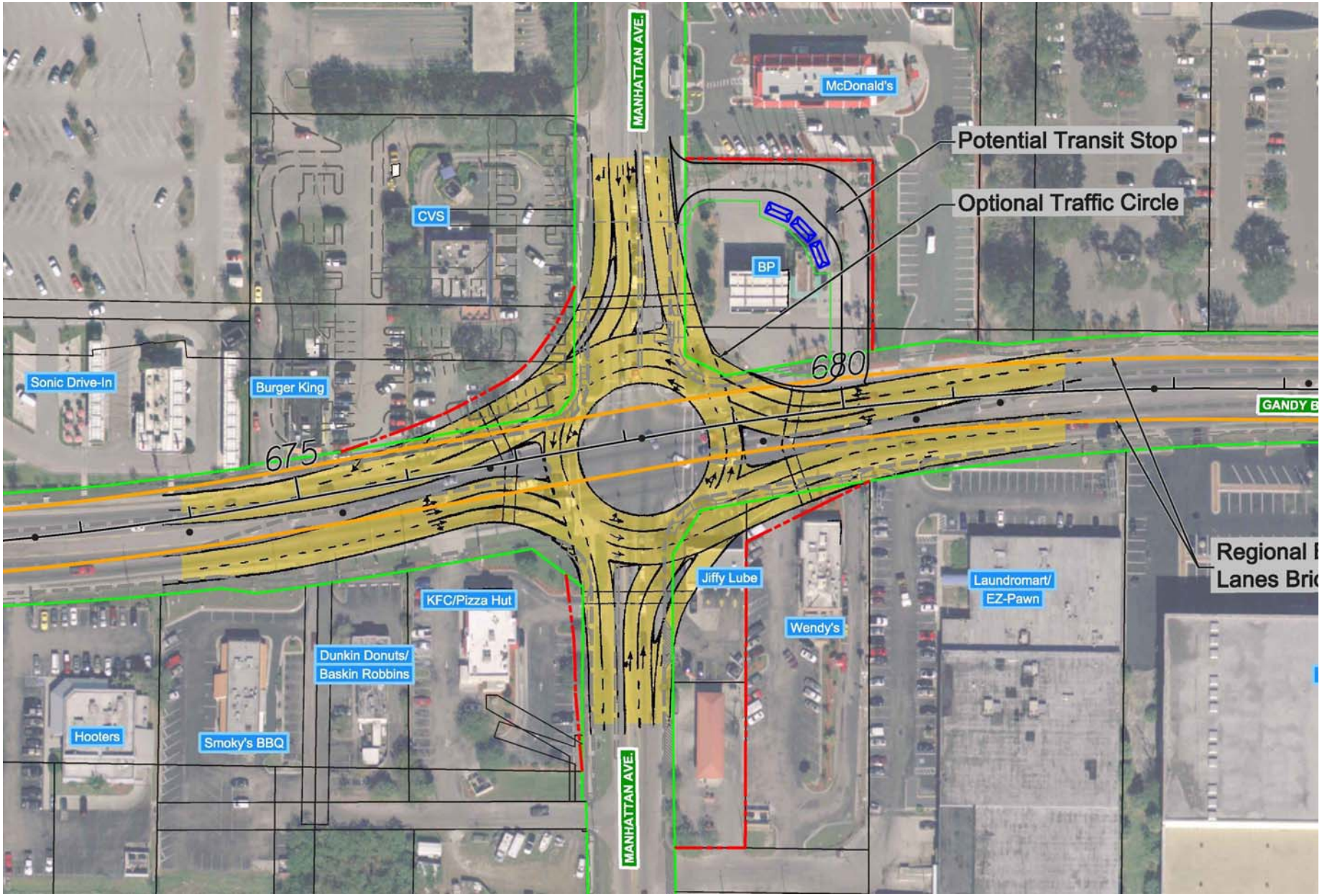
Option 2 reconfigures the intersection into a 3-lane traffic circle. The three (3) lanes entering the traffic circle in the east-west directions transition back to two (2) lanes east and west of the circle (**Figure 5-9**).



Gandy Connector PD&E Study
From the Gandy Bridge to the western terminus of the Selmon Expressway
Hillsborough County, Florida

Figure 5-8: Westshore Boulevard Traffic Circle Option

TAMPA-HILLSBOROUGH EXPRESSWAY AUTHORITY



Gandy Connector PD&E Study
From the Gandy Bridge to the western terminus of the Selmon Expressway
Hillsborough County, Florida

Figure 5-9: Manhattan Avenue Traffic Circle Option

TAMPA-HILLSBOROUGH EXPRESSWAY AUTHORITY

5.9 EAST END RAMP CONNECTION OPTIONS

Option 1 provides no exit or entrance ramps between the Elevated Express Lanes and Dale Mabry Highway. The Elevated Express Lanes connect to the Selmon Expressway with the next exit to the north at Willow Avenue.

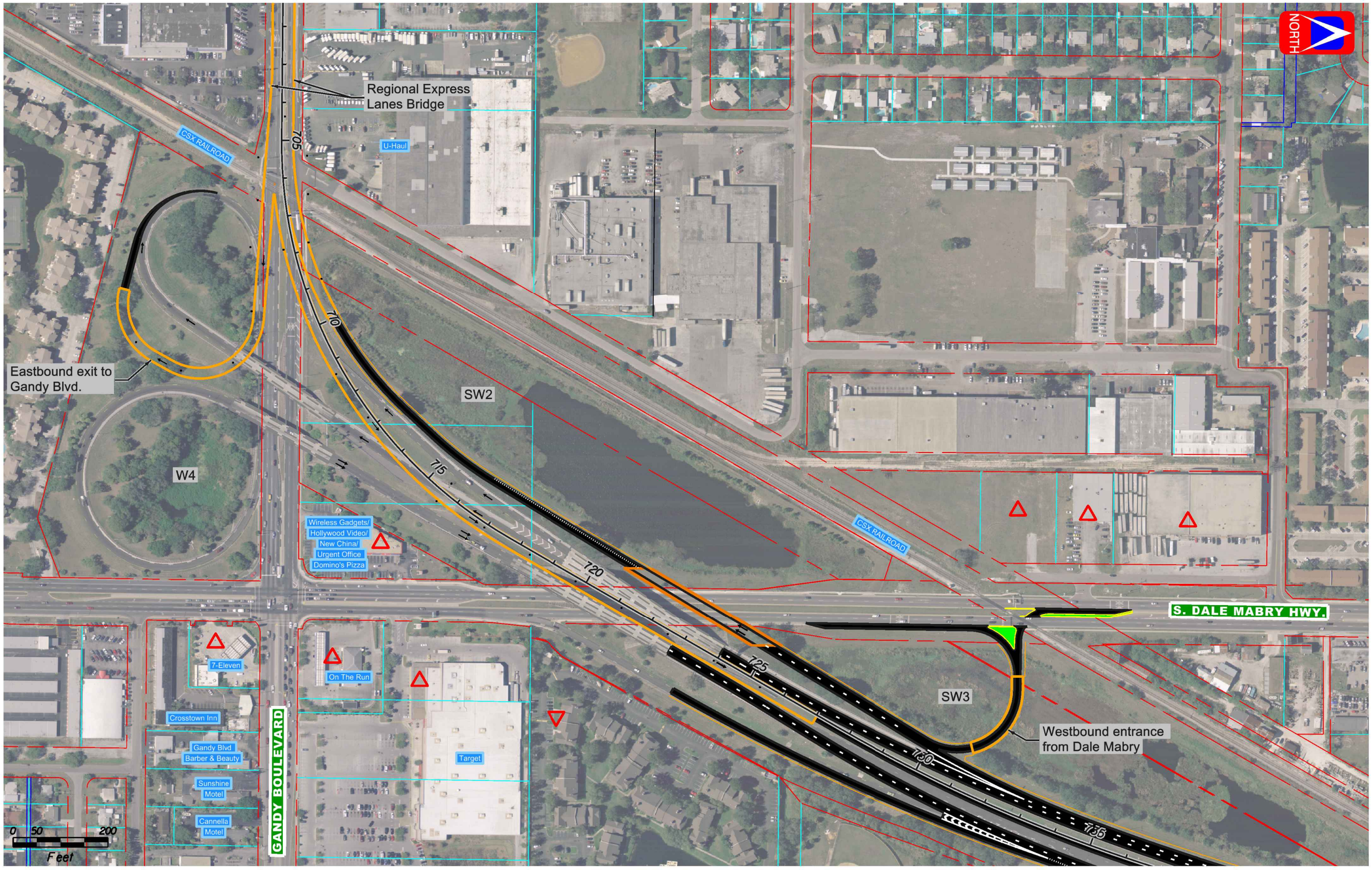
Option 2 (**Figure 5-10**) provides an entrance ramp from Dale Mabry Highway to the westbound direction of the Elevated Express Lanes. This westbound entrance ramp is located north of Gandy Boulevard and joins the elevated system near the CSX railroad crossing west of Dale Mabry Highway. This Option also provides an exit ramp from the eastbound Elevated Express Lanes to eastbound Gandy Boulevard west of Dale Mabry Highway.

5.10 COST ESTIMATES

Assumptions for all cost estimates are included in **Table 5-1**. Cost estimates for various combinations of alternatives and options are included in **Table 5-2**. The preliminary total cost estimate ranges from approximately $115 to $125 million, including design, CEI and right of way acquisition, depending on the combination of options included.

Table 5-1 Assumptions for Cost Estimates

Category	Applied Factor
Maintenance of Traffic (MOT)	10%
Mobilization	15%
Contingency	10%
Design	10%
Construction Engineering Inspection (CEI)	10%
Right of Way Costs	$50/sq ft



LEGEND

- PROPOSED ROADWAY
- PROPOSED R/W
- BRIDGE STRUCTURE/ RETAINING WALL
- DIRECTION OF TRAVEL
- PROPOSED SIDEWALK
- EXISTING R/W
- EXISTING PROPERTY LINE
- WETLAND/SURFACE WATERS
- BRIDGE PIER LOCATION
- POTENTIAL POND SITE
- POTENTIAL CONTAMINATION SITE
- POTENTIAL RESIDENTIAL RELOCATION
- POTENTIAL BUSINESS RELOCATION
- DATE OF PHOTOGRAPHY: November, 2006

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GANDY CONNECTOR PD&E STUDY

Selmon Expressway Ramp Options

Figure 5-10

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Table 5-2 Cost Estimates with Various Options

Option	Base Cost	Traffic Circles		Transit Station @ Manhattan	Bus Bays	Cost ($million)
		Westshore	Manhattan			
Enhanced Base Only*	$ 115,000,000					$ 115
a	$ 115,000,000	$ 5,510,000	$ 4,674,000	$ 240,000		$ 125
b	$ 115,000,000	$ 5,510,000			$ 440,000	$ 121
c	$ 115,000,000				$ 440,000	$ 115

*Enhanced Base includes shorter bridge at west end (Option 5), Bridge Street improvements (Option 1), Elevated Express Lanes and on & off ramps at Dale Mabry (Option 2).

**Including right-of-way and construction costs, design, CEI, lighting, ITS, and toll gantries.

5.11 PREFERRED ALTERNATIVE

The recommended Preferred Alternative consists of the Elevated Express Lanes with Option 5 on the west end, Option 1 at Bridge Street, and with the additional ramps included on the east end at Dale Mabry Highway. In August 2009 the "traffic circles" (roundabouts) were eliminated from consideration at Westshore Boulevard and Manhattan Avenue due to opposition expressed by the public as well as various agency officials. In addition, for the high incremental costs, only marginal traffic operational benefits would be gained.

Additional proposed "design features" are described in Section 6.0. Conceptual Design Plans for the Preferred Alternative are included as **Attachment A** of the *SEIR* document.

Further coordination with representatives from Culbreath Key, Regency Coves and the City of Tampa will be conducted during the design phase to refine the conceptual design for the Bridge Street Option.

During the design phase additional analysis will be performed at the eastbound and westbound access ramps to and from the Elevated Express Lanes in the vicinity of Dale Mabry Highway.

6.0 PRELIMINARY DESIGN ANALYSIS

6.1 DESIGN TRAFFIC VOLUMES

Design annual average daily traffic (AADT) volumes were previously shown in **Figure 3-6.** The design year is 2035. In addition, directional design hour volumes (DDHV) were previously shown in **Figure 3-7**.

6.2 TYPICAL SECTIONS

The proposed typical section for the Recommended Build Alternative was previously shown in **Figure 5-1**. The proposed design speed for the elevated connector is 50 miles per hour (mph). The proposed design speed for the loop ramps at the east end is 20 mph.

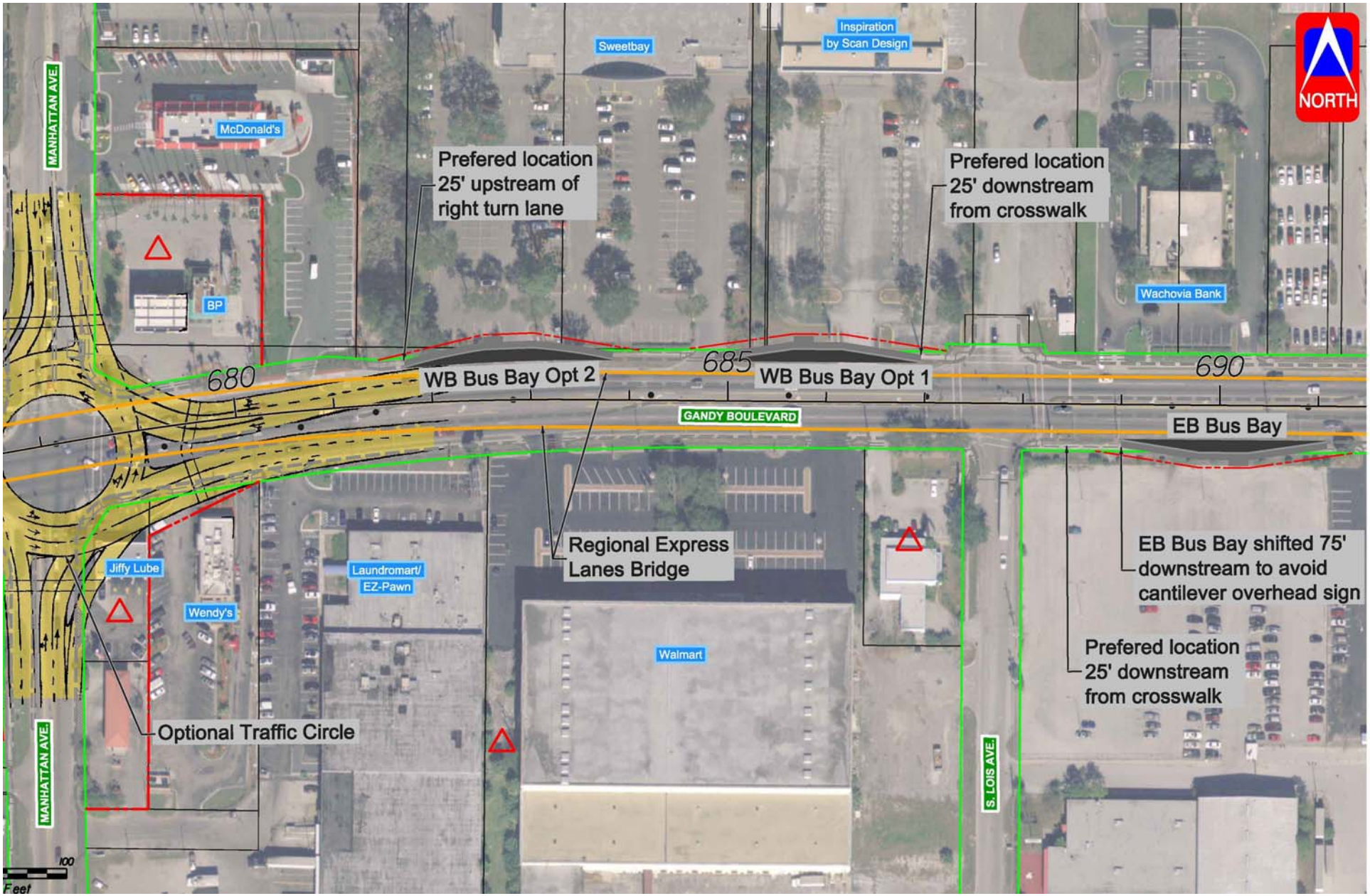
6.3 INTERSECTION CONCEPTS AND SIGNAL ANALYSIS

No changes are proposed to any intersections except for the proposed construction of Option 1 at Bridge Street. In addition, bus bays may be considered for construction at several locations near Lois Avenue.

Bus Bays

Potential locations for bus bays on Gandy Boulevard near Lois Avenue are shown in **Figure 6-1**. The overall length of the bus bay is about 210 feet, and it includes a widened sidewalk and a pad for a shelter next to the bus stop. From an aesthetic perspective, a texturized surface for the bus bay could be used to tie in the aesthetic theme and visually separate the bus bay from the adjacent lane.

With respect to bus bay locations, the criteria suggest 25-foot desirable distance downstream from the intersection crosswalk. For the eastbound direction, due to a proposed cantilever overhead sign structure about 100 feet from the crosswalk, the bus bay was moved further to the east. In the westbound direction, two (2) different options are shown downstream of the Lois Avenue intersection. Both options would impact one or more private driveways.



Gandy Connector PD&E Study
From the Gandy Bridge to the western terminus of the Selmon Expressway
Hillsborough County, Florida

Figure 6-1: Possible Bus Bay Locations Near Lois Avenue

TAMPA-HILLSBOROUGH EXPRESSWAY AUTHORITY

Intersection Sight Distance

Expected sight distance for side street motorists on Gandy Boulevard was checked at the three unsignalized intersections with median openings, as shown in **Appendix D** of this report. As shown on the drawings, a minimum of 950 feet of sight distance is provided in either direction, with only small slivers of sight obstruction due to the proposed bridge columns. The sight distance requirements were determined based on standards included in AASHTO's *Geometric Design of Highways and Streets* (2004), for a 45 mph operating speed. Additional assumptions are included on the first sheet in that Appendix. As noted on the first sheet, Standard Index No. 546 requires a 2-second full view of entering vehicles at the required sight distance. Pier locations during final design should be adjusted, as necessary, to consider sight distance requirements.

6.4 ALIGNMENT AND RIGHT OF WAY NEEDS

The proposed alignment is shown on the Conceptual Design Plans (*SEIR* Attachment A). The same plan sheets also show areas proposed for right of way acquisition, which are located in the vicinity of Bridge Street. The total area of proposed right of way acquisition is approximately 0.68 acres. Future stormwater management facilities may be needed so the right-of-way acquisition cost could be greater than what is noted within this Section.

6.5 RELOCATIONS

Expected relocations are discussed in Section 1.3 of the *Environmental Technical Compendium* (ETC).

6.6 RIGHT OF WAY COSTS

For the proposed improvements at Bridge Street, the approximate right of way cost, based on an overall average of $50 per square foot (including all costs associated with acquisition) is approximately $1.5 million. Future stormwater management facilities may be needed so the right-of-way acquisition cost could be greater than what is noted within this Section.

6.7 CONSTRUCTION COSTS

A preliminary estimate of construction and other costs is included in **Table 6-1**. The current preliminary total estimate is approximately $115 million, including final design, right of way acquisition, construction and CEI.

Table 6-1 Cost Estimate for the Preferred Alternative

Cost Component	$ Millions	Comments
Final Design[2]	7.4	Based on 10% of construction cost
Right-of-Way	1.5	Based on $50/SF
Construction[3]	99	Based on FDOT bid costs, June 2009
CEI	7.4	Based on 10% of construction cost
Total Cost Estimate (rounded)	$115	Includes surface street improvements near Bridge Street and ramps at east end near Dale Mabry Highway

Notes: 1. Capital costs only; no annual operating/maintenance costs included
2. Also referred to as "preliminary engineering"
3. Includes maintenance of traffic (MOT), mobilization, and contingency

6.8 PRELIMINARY ENGINEERING COSTS

The cost of preliminary engineering, design, and construction engineering inspection (CEI) is approximately $14.8 million, as shown in **Table 6-1** above.

6.9 PEDESTRIAN AND BICYCLE FACILITIES

No provisions for bicyclists or pedestrians would be included on the Elevated Express Lanes due to its limited access/toll status. The surface street Gandy Boulevard includes sidewalks for pedestrians, in addition to paved trails near the west end for non-motorized users.

6.10 UTILITY AND RAILROAD IMPACTS

Some utility relocations will be required prior to construction; existing utilities are listed in Section 1.1.12. A detailed utility relocation plan, including cost estimates, will be

developed during final design. A preliminary estimate of potential utility conflicts at bridge pier foundation and overhead locations is included in **Table 6-2**. It may be possible to avoid some of these conflicts by making minor shifts in the proposed pier locations. These will need to be evaluated more closely during the final design phase. Coordination with CSX Transportation will be required for the potential conflict with the railroad crossing gate arms at the railroad crossing located east of Church Street.

Table 6-2 Potential Utility Conflicts

Underground (UG) or Aerial	Location (Approximate Station #)	Potential Utility Conflict
UG	647+40	Drainage pipe crossing
UG	651+00	12” water main
UG	662+30	ITS conduits
UG	678+10	drainage crossing
UG	692+20	Buried fiber optic
UG	695+00	Sanitary force main
UG	705+00 to 710+00	Buried fiber optic, buried TV, box culvert, buried telephone
Aerial	655+10	Verizon 100 pair cable
Aerial	658+00	Verizon 100 pair cable
Aerial	662+30	Verizon 100 pair cable
Aerial	670+90	Verizon 100 pair cable
Aerial	681+20	Verizon 20 pair cable
Aerial	688+20	TECO electric
Aerial	698+00	TECO electric
Aerial	698+20	Verizon fiber optic cable
Aerial	706+40	CSX Railroad Crossing Gate Arms

6.11 TRAFFIC CONTROL PLAN

Gandy Boulevard provides access to numerous businesses along this corridor. Due to its importance, Gandy Boulevard should remain functional throughout the duration of the construction phase. The existing four-lanes and pedestrian accommodations should be maintained to the maximum extent possible. Lane closures, if necessary, should occur during night or other off-peak hours.

The following conceptual construction sequence will help maintain traffic along Gandy Boulevard:

- Relocate any existing utilities within the newly-expanded right of way.
- Construct new ponds and/or underground stormwater collection system.
- Construct temporary pavement as necessary to maintain existing two-way traffic.
- The bridge pier foundations will be constructed during off-peak periods and lane closures will be limited to a single lane in each direction.

- Where new construction and/or widening are needed, the eastbound or westbound lanes (travel lanes, shoulders or curb and gutter, and sidewalks) will be maintained.
- Low impact construction: Piers and superstructure can be constructed off-site, with on-site installation during off-peak times. All assembly from above with minimal lane closures.

- Remove temporary pavement where applicable.
- Construction should start at either end and once the piers are in place the elevated bridge can be installed while construction of the remaining end is in progress.

6.12 VALUE ENGINEERING

Not applicable for this project at this stage.

6.13 DRAINAGE

The "Gandy Flume" conveyance system that discharges into Old Tampa Bay (categorized as Outstanding Florida Waters [OFW]) along the north side of Gandy Boulevard, as discussed previously in Section 1.1.7, is the outfall for the Norma Park drainage basin that encompasses the project limits. As a part of this study, a conceptual drainage analysis is being conducted to estimate the stormwater management facility (SMF) needs for the project. Preliminary coordination meetings were held with the SWFWMD and the City of Tampa to discuss the rulemaking currently in progress, and to initiate a partnering approach to providing adequate SMF for the proposed improvements, respectively. An Environmental Resource Permit from the SWFWMD will be required for this project, and it is anticipated that associated rulemaking currently underway will be in effect when the proposed project is in the final design phase and being permitted. The treatment volumes were computed based on current Total Maximum Daily Loadings (TMDL) research recommendations, including that for discharges to OFW's, which will serve as the basis of the pending statewide water management district rules.

Based on the meetings held for this preliminary study, water quality treatment will be required for the proposed improvements located between the beginning of the project and the CSX railroad. For this portion of the project, attenuation would not be required due to the tidal influence on the existing outfall. Treatment options evaluated were done in light of minimizing the impact to properties along Gandy Boulevard. This also results in less cost to complete the project by minimizing the number of necessary facilities. Options considered include one or a combination of the following methods:

- Partnering with the City of Tampa/developer of the Georgetown Apartments property to provide funding for compensatory treatment as part of a new SMF and/or habitat enhancements at this existing outfall to Old Tampa Bay
- A series of best management practices (BMPs) that in total would be considered as a treatment "train". These BMPs could consist of a combination of regularly scheduled street sweeping, inlet filtration mechanisms, and shallow median swales and/or median landscaping irrigation.
- Traditional SMF such as wet retention/detention ponds.

- Utilize additional Continuous Deflective Separation (CDS) units along the corridor where feasible.

For the remainder of the project, located east of the railroad, both water quality treatment and quantity attenuation would be required. There are existing SMFs in this area in the open areas within the existing interchange. The proposed drainage system design will provide the required storage volumes by maximizing the use of these areas to provide adequate treatment and attenuation, above that previously permitted, in addition to new traditional wet retention/detention ponds.

6.14 BRIDGE ANALYSIS

The typical likely span length is 140 feet but span lengths requirements change considerably at the intersections. These span length requirements are summarized in the table below:

Table 6-3 Span Length Requirements

	Span Length Ranges (Without Traffic Circles)
Typical along Gandy Boulevard	120’ to 140’
Manhattan Avenue	140’ to 200’
Westshore Avenue	120’ to 280’
Selmon Expressway	107’ to 133’

As noted in **Table 6-3**, the majority of the corridor will require spans between 120 feet and 140 feet. This includes the intersection at the Selmon Expressway located on the east end of the project. The possible superstructure options for these span ranges includes prestressed, precast concrete Florida I-beams, Florida U-beam, steel plate or box girders and post-tensioned segmental box girders. The intersections require significantly longer spans of up to 200 feet at Manhattan Avenue while Westshore Boulevard requires a span length up to 280 feet. These span lengths will require that either steel plate, box girders or post-tensioned segmental box girders be used at the Westshore and Manhattan intersections.

The box girders are considered to be more aesthetically pleasing than I-beams which will be important for this highly visible corridor. Both can be "constructed from above", however, the box girders are considered more aesthetically appealing. The scale of projects like this one allows the contractor to spread their initial high cost of setting up forms for the segmental concrete boxes over a large number of sections allowing them to reduce the initial construction costs. They also have the opportunity to "fine tune" their erection procedures which are very repetitive allowing them to be more efficient and reduce cost even more. The results are that both the initial construction cost and the future maintenance cost of steel box girders are typically more expensive than the post tensioned segmental box girders. Based on the above, the post tensioned segmental box girder is the preferred superstructure. The final superstructure selection will be determined during the Bridge Development Report (BDR).

The likely substructure will be a single column "hammerhead" pier on either pile or shaft supported spread footings. There are numerous locations along this corridor where the column of the hammerhead pier will need to be offset from the centerline of the superstructure. These offsets are summarized below:

Table 6-4 Pier Offset Requirements

	Maximum Column Offsets (Without Traffic Circles)
Typical along Gandy Boulevard	Up to 7'
Manhattan Avenue	0'
Westshore Avenue	0'
Selmon Expressway	Up to 20'

Most of the hammerhead pier columns will be within 7 feet of the centerline of the Elevated Express Lanes. The Selmon Expressway interchange requires an offset of up to 20 feet. The hammerhead pier substructure cannot handle these large offsets so a cantilever pier will be required.

At least four straddle bents will be required near the east end of the Elevated Express Lanes at the Selmon Expressway interchange, in addition to cantilever piers. The span lengths of these straddle bents are approximately 70 feet, 89 feet, 130 feet and 137 feet. These straddle bents will need to be post tensioned to support the elevated superstructure. The pier locations and pier types will be determined during the preparation of the BDR.

Drawings are included in **Appendix D** of this document which estimate sight distances from the side streets with median openings in relation to proposed pier locations.

6.15 ITS REQUIREMENTS AND CONTRAFLOW OPERATION

The elevated section of Gandy Boulevard is proposed to be a toll facility with electronic open road toll collection. Open Road Tolling (ORT) is the collection of tolls without the use of toll booths. The major advantage to ORT is that users are able to drive through the facility at highway speeds without having to slow down to pay the toll. In some installations, ORT may also reduce congestion at the plazas by allowing more vehicles per hour/per lane. One toll gantry in both the westbound and eastbound direction will be needed at the on and off ramps to the surface facility at the west end; all other vehicles will be charged a toll at a mainline gantry. ITS equipment should be placed at the west end of the project for incident management on the elevated facility.

Contraflow Operation

In 2006, the Hillsborough County Emergency Management Office (Hillsborough EMO) requested THEA to lead the process to contraflow the Selmon Expressway. Hillsborough EMO's desire was to have a plan approved by the State Emergency Management Office to facilitate a rapid evacuation of the Tampa interbay peninsula and south Pinellas County areas served by the Gandy Bridge.

A contraflow plan was developed for potential deployment during a declared state of emergency. The planning was approached in two phases. Phase I was a preliminary evaluation task to develop and evaluate options. Phase II developed tactical plans for

field implementation of a contraflow plan. In 2007, the limits of the contraflow plan for the Selmon Expressway were recommended from Gandy Boulevard to 50th Street.

As with any contraflow plan, it is designed for daylight operation only with limited access to and from the contraflow lanes. These contraflow lanes are for use by passenger vehicles only. Heavy trucks are restricted to the normal operating lanes. Two options were evaluated for the beginning crossover for the contraflow operation at the west end of the Elevated Express Lanes.

Option 1 considered a crossover on the elevated lanes on the Hillsborough causeway near Gandy Park boat ramp. A removable barrier system was considered for the divided elevated lanes. The westbound lanes of the Gandy Bridge would have to be closed to public traffic in order to prevent motorist from entering the evacuation zone. These lanes would be reserved for official use only by public works, emergency services and law enforcement. This Option would provide two contraflow lanes and two lanes of normal operation from the boat ramp to the Selmon Expressway.

Option 2 considered a crossover on the Pinellas causeway west of the bridge. A two-lane paved crossover was considered for the divided median on the Pinellas causeway. The westbound lanes of the Gandy Bridge would be in contraflow operation. On the Hillsborough causeway near Gandy Park boat ramp, the two (2) contraflow lanes would merge to one travel lane as they approach the elevated section. The westbound lanes of the Gandy Bridge would not be available for official use. Public works, emergency services and law enforcement personnel would have to use the Howard Frankland Bridge. This Option would provide two (2) contraflow lanes and two lanes of normal operation from the Pinellas causeway to the Selmon Expressway.

Of the two options considered, **Option 1** is recommended for the contraflow plan. This option is recommended in order to provide support to Pinellas County by allowing westbound access on the Gandy Bridge for public works, emergency services and law enforcement personnel. Schematics showing the potential transition areas at the west and east ends of the Elevated Express Lanes are included in **Appendix C**.

6.16 ACCESS MANAGEMENT

No changes are proposed to existing intersections or median openings on Gandy Boulevard, except at Bridge Street, where a full signalized median opening is proposed with the build alternative.

6.17 AESTHETICS AND LANDSCAPING

Since aesthetics were considered to be an important design element of the proposed project, a series of before-and-after images were produced to show the Project Advisory Group and the general public what the proposed elevated structure might look like. In addition to these before-and-after images, additional images were prepared to evaluate the visual impact of various bridge heights, as shown in **Figure 6-2.** The other images are shown in **Figure 6-3.**

Figure 6-2 Elevated Express Lanes – Height Options

Looking South from Culbreath Key

Near Regency Cove Entrance, Looking South

On Hesperides Street South of Gandy Boulevard, Looking Northeast

On Gandy Boulevard East of Manhattan Avenue, Looking Northeast

The lower right corner in **Figure 6-2** illustrates the No-Build view. Continuing clock wise in the lower left corner is a view of the proposed Elevated Express Lanes Bridge at 20 feet, 25 feet and finally at 30 feet heights. The recently completed roadway and landscaping enhancements will be maintained as much as possible. The landscaping within the median will remain low ground cover and with a 30-foot bridge, the pedestrian and driver's view along the corridor would remain open. Aesthetics will be further refined during the design phase.

In addition to the before and after images illustrated previously, various alternatives for the bridge pier designs have also been examined. These concept designs are shown in **Figure 6-4**.

Gandy Connector PD&E Study
From the Gandy Bridge to the western terminus of the Selmon Expressway
Hillsborough County, Florida

Figure 6-4: Bridge Pier Aesthetic Concepts

TAMPA-HILLSBOROUGH EXPRESSWAY AUTHORITY

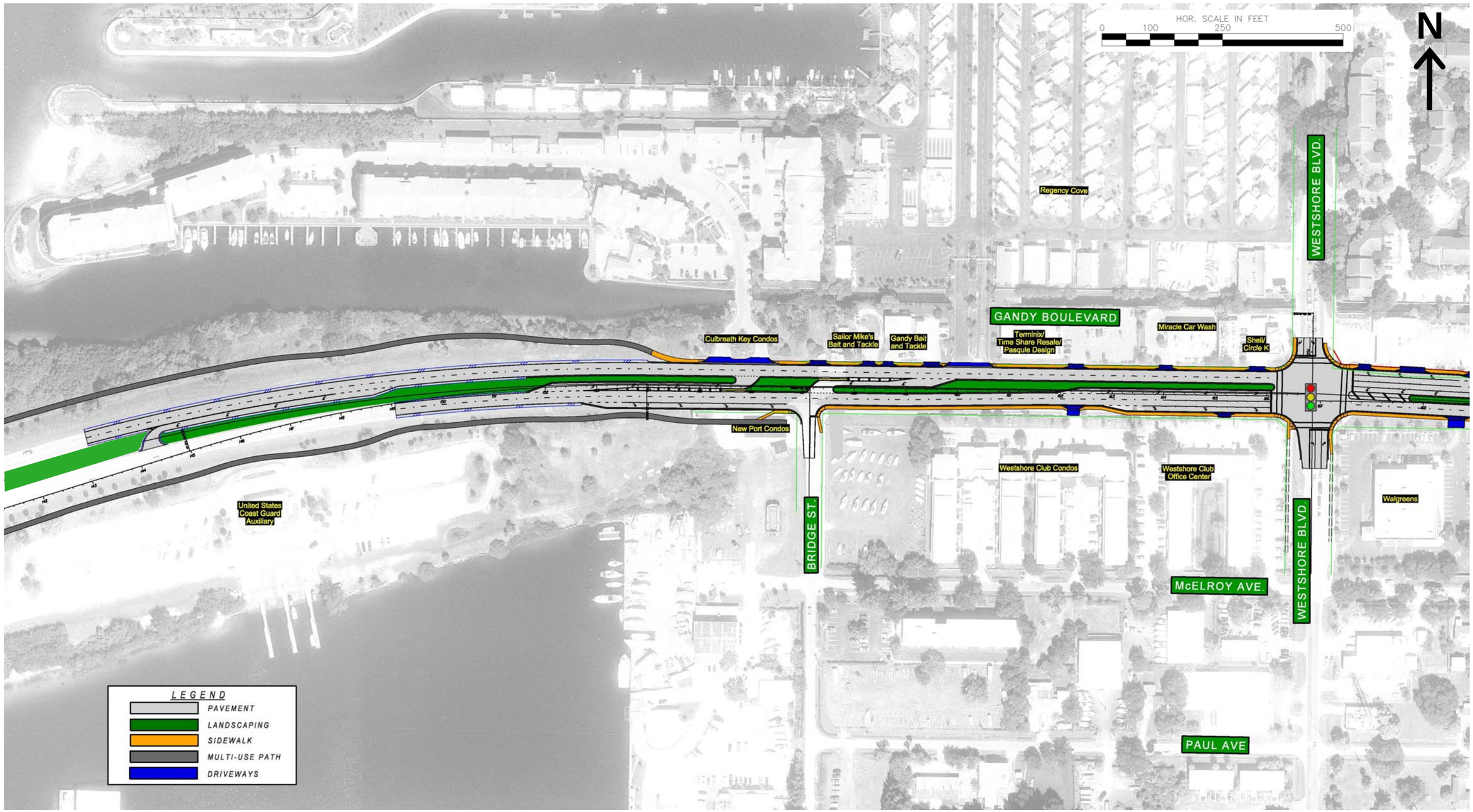
6.18 HIGHWAY LIGHTING

The existing decorative street lighting on the outside of Gandy Boulevard will remain in place. Similar style street lighting could be included on the elevated structure. These street lights are shown in **Figure 6-5.** The elevated structure will use standard highway lighting.

Figure 6-5 Computer Rendering of Potential Pier-Mounted Street Lights

PEA APPENDIX A

Rendered Concept Plans of New Construction of FPID 255822-2-52-01



Source: American Consulting Engineers of Florida, LLC., 2007 with updates in 2009 to reflect changes made during construction.

Aerial Photo Date: 10/03

Gandy Connector PD&E Study
From the Gandy Bridge to the western terminus of the Selmon Expressway
Hillsborough County, Florida

PEA Appendix A: Renderings of FDOT FPID 255822-2-52-01 – Sheet 1 of 4

(Construction to be Completed in 2009)

TAMPA-HILLSBOROUGH EXPRESSWAY AUTHORITY

HOR. SCALE IN FEET
0 100 250 500

N

S. TRASK ST.

MANHATTAN AVE.

GANDY BOULEVARD

S. HESPERIDES ST.

S. RENELLIE DR.

S. TRASK ST.

McELROY AVE.

PAUL AVE.

Mr. Empanada
Royal Palm Suites
Budget Car & Truck Rental
Tequila Catering
Woodys Auto Sales
Westcoast Collision
George's Best Motors
Pizza Hut
Petrol Mart
Caffino
SAGO Internet Business Center
Hair Crafters
Amscot
Sonic Drive-In
Egg Platter
Burger King
BP
McDon
Jiffy Lube
Wendy's
Gandy Animal Hospital
Citgo
Walgreens
Gandy Plaza
La Quinta Inn
Enterprise
Awesome Rayz/ RML Tanning Supply
Checkers
Monday Maid Coin Laundry
Grow Financial Federal Credit Union
Ranch House Grill
Hooters
Smoky's BBQ
Dunkin Donuts/ Baskin Robbins
KFC/Pizza Hut

LEGEND
- PAVEMENT
- LANDSCAPING
- SIDEWALK
- MULTI-USE PATH
- DRIVEWAYS

Looking East on Gandy Boulevard at Manhattan Ave

Gandy Connector PD&E Study
From the Gandy Bridge to the western terminus of the Selmon Expressway
Hillsborough County, Florida

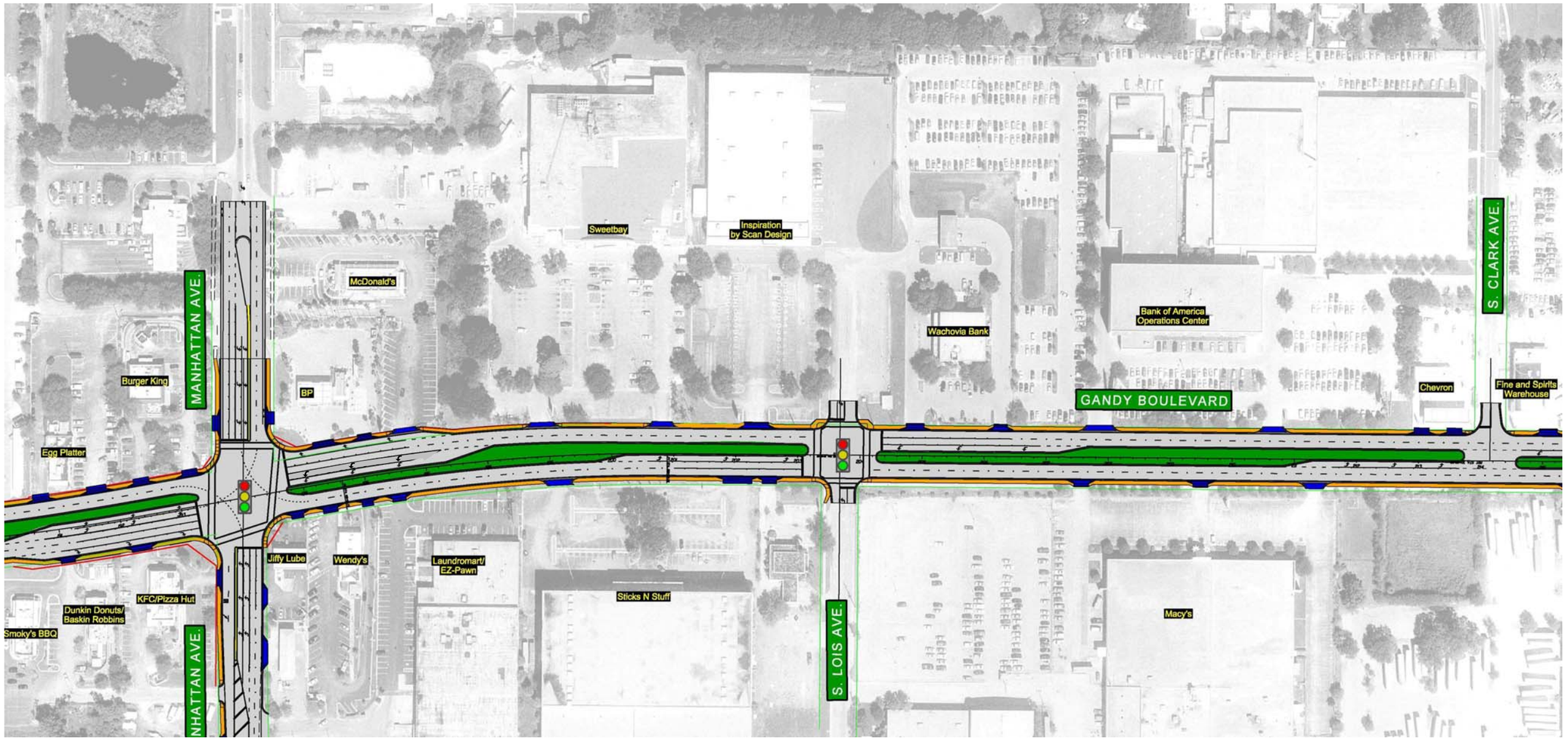
PEA Appendix A: Renderings of FDOT FPID 255822-2-52-01 – Sheet 2 of 4

(Construction to be Completed in 2009)

TAMPA-HILLSBOROUGH EXPRESSWAY AUTHORITY

HOR. SCALE IN FEET
0 100 250 500

N

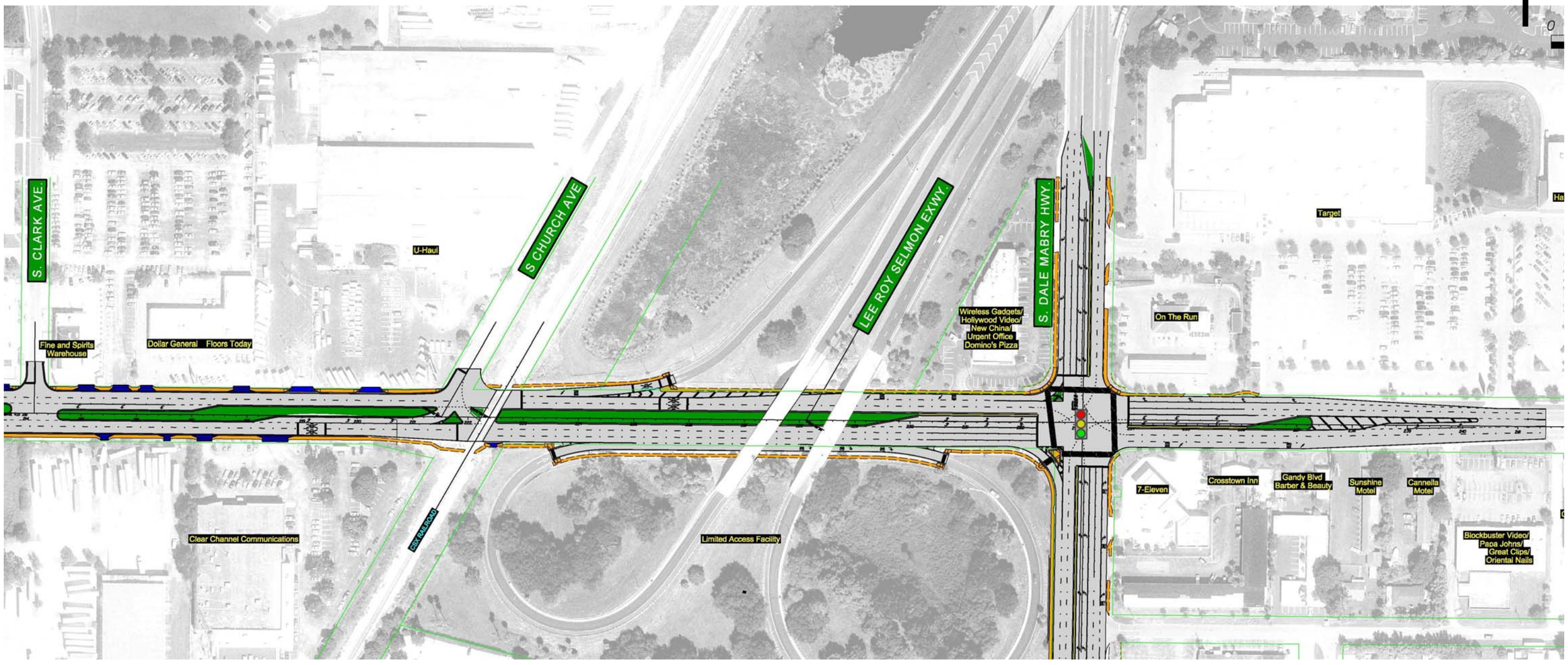


Gandy Connector PD&E Study
From the Gandy Bridge to the western terminus of the Selmon Expressway
Hillsborough County, Florida

PEA Appendix A: Renderings of FDOT FPID 255822-2-52-01 – Sheet 3 of 4

(Construction to be Completed in 2009)

TAMPA-HILLSBOROUGH EXPRESSWAY AUTHORITY



Gandy Connector PD&E Study
From the Gandy Bridge to the western terminus of the Selmon Expressway
Hillsborough County, Florida

PEA Appendix A: Renderings of FDOT FPID 255822-2-52-01 – Sheet 4 of 4

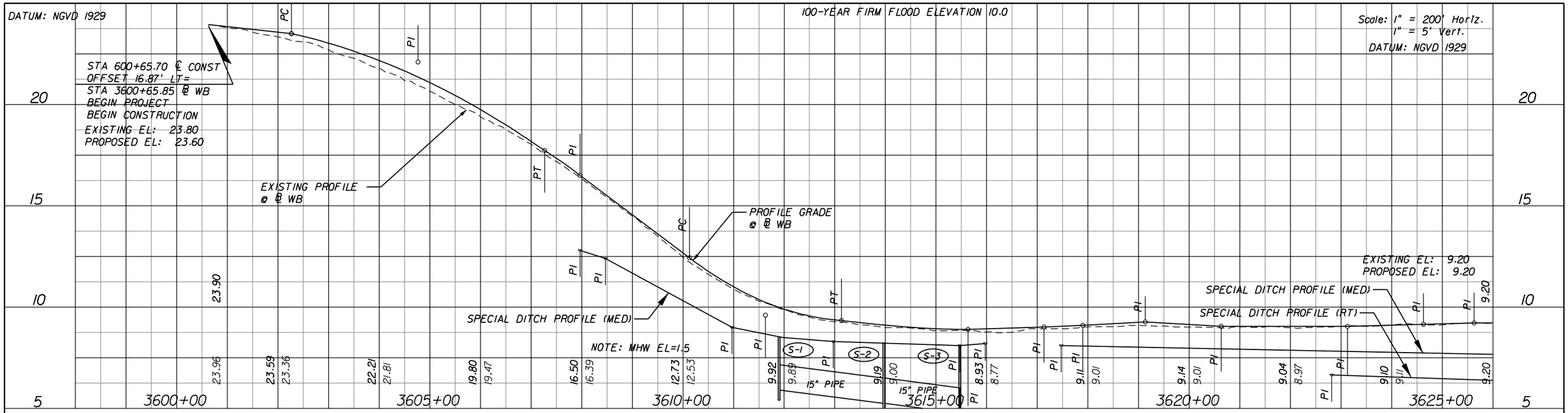
(Construction to be Completed in 2009)

TAMPA-HILLSBOROUGH EXPRESSWAY AUTHORITY

PEA APPENDIX B

Existing

Drainage Maps



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* = DISCHARGE STRUCTURE

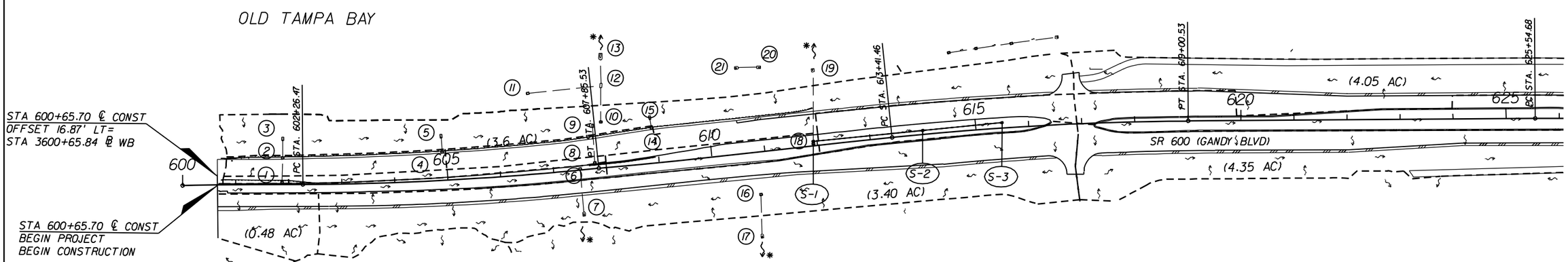
NOTE: ALL DISCHARGE STRUCTURE HAVE A TAILWATER CONDITION EQUIVLANT TO THE MEAN HIGH TIDE ELEVATION OF 1.50.

OLD TAMPA BAY

N

0 50 200

Feet



OLD TAMPA BAY

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REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

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Jeffrey S. Novotny, P.E. No. 51083

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 600	HILLSBOROUGH	255822-2-52-01

DRAINAGE MAP

SHEET NO. 3

USER: 5harvlm 08/01/2005 10:18:24 PM f:\project\5037600\drainage\drmprd01.dgn

DATUM: NGVD 1929

PROFILE GRADE ℄ WB

EXISTING EL: 9.20
PROPOSED EL.: 9.20

EX 24" PIPE TO CANAL

EXISTING PROFILE GRADE

PROFILE GRADE

100-YEAR FIRM FLOOD ELEVATION 10.0

EX 2'x2' CBC

Scale: 1" = 200' Horiz.
1" = 5' Vert.
DATUM: NGVD 1929

EXISTING EL: 6.02
PROPOSED EL.: 6.13

18" PIPE

SPECIAL DITCH PROFILE (MED)

15" PIPE

FL 5.56 FL 5.70

SPECIAL DITCH PROFILE (MED)

SPECIAL DITCH PROFILE (RT)

FL 4.80

FL 4.54

MHW EL 1.5

AH. STA. 637+16.5 EL. 8.45

BK. STA. 3637+16 ℄ WB EL. 8.45

FL 2.70

FL 3.00

24" PIPE

24" PIPE

FL 0.70 FL 0.78

FL 0.93

18" PIPE

18" PIPE

FL 1.16

FL 0.95

FL 1.12

18" PIPE

18" PIPE

FL 2.20

FL 2.08

FL 1.89

STA 637+92.78 ℄ CONST=
OFFSET 15.00' LT
STA 3637+98.53 ℄ WB

3630+00 3635+00 640+00 645+00 650+00

OLD TAMPA BAY

CULBREATH CAY DRIVE BRIDGE

CONC. CANAL

CONC. CANAL

2-3'X6' C.B.C.

(0.14 AC)

(0.10 AC)

(0.12 AC) (0.14 AC) (0.22 AC) (0.13 AC) (0.12 AC) (0.18 AC)

(0.28 AC) (0.14 AC) (0.19 AC) (0.14 AC) (0.47 AC)

(0.31 AC) (0.30 AC) (0.12 AC)

(0.23 AC) (0.25 AC)

(0.17 AC)

SR 600 (GANDY BLVD)

BRIDGE STREET

WEST SHORE BLVD

N

0 50 200
Feet

OLD TAMPA BAY

* = DISCHARGE STRUCTURE

NOTE: ALL DISCHARGE STRUCTURE HAVE A TAILWATER CONDITION EQUIVLANT TO THE MEAN HIGH TIDE ELEVATION OF 1.50.

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ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 600	HILLSBOROUGH	255822-2-52-01

DRAINAGE MAP

SHEET NO. 4

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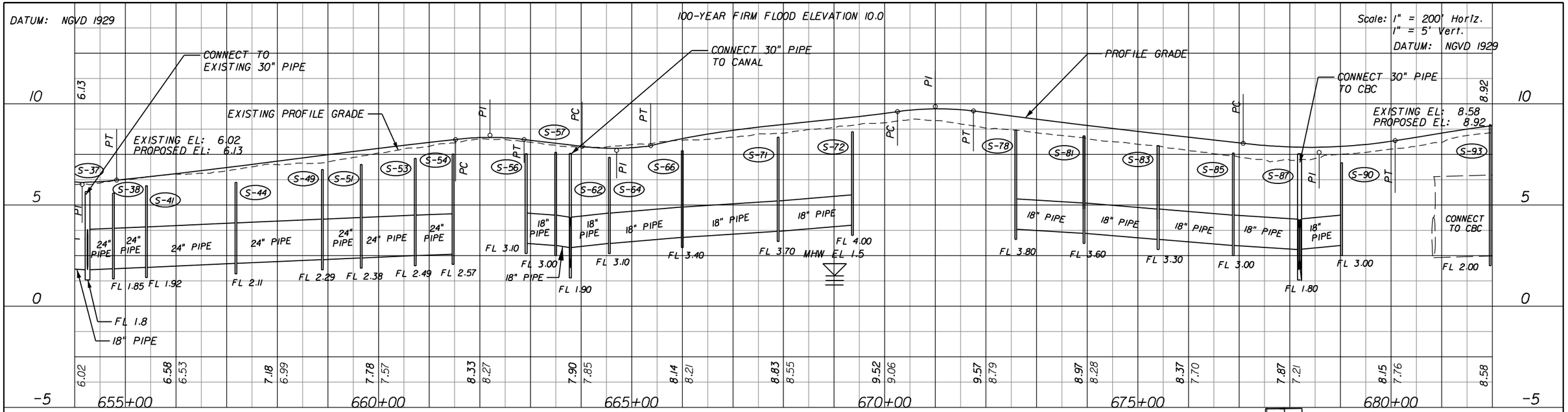

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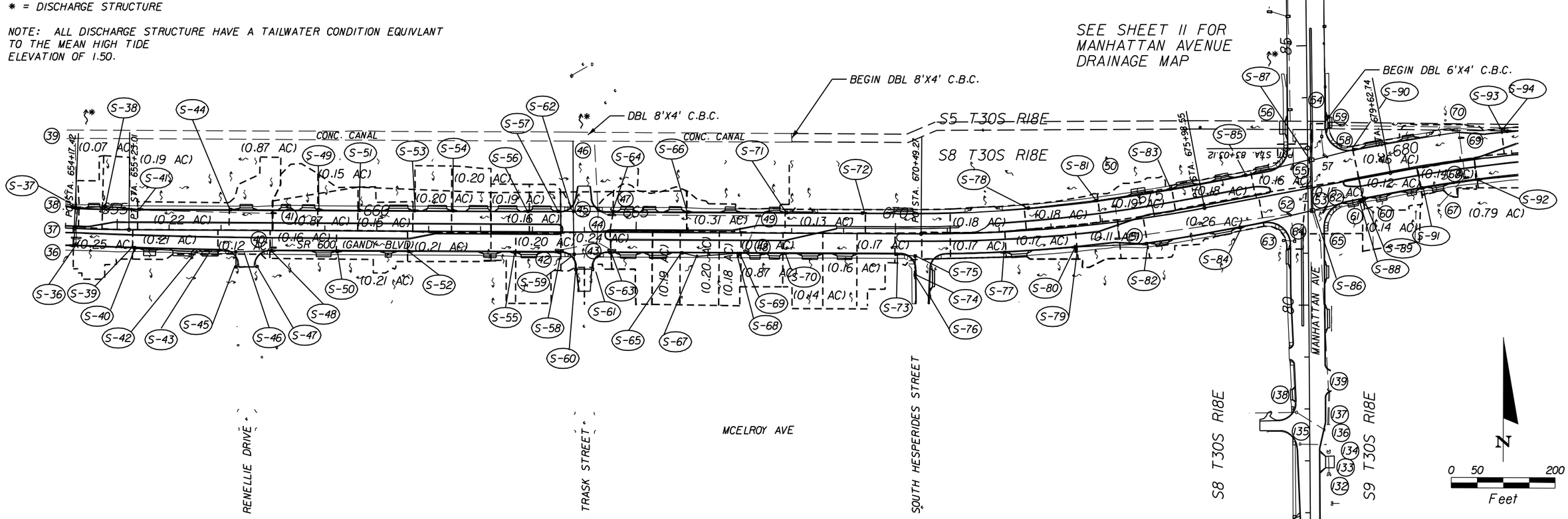
* = DISCHARGE STRUCTURE

NOTE: ALL DISCHARGE STRUCTURE HAVE A TAILWATER CONDITION EQUIVLANT TO THE MEAN HIGH TIDE ELEVATION OF 1.50.

SEE SHEET 11 FOR MANHATTAN AVENUE DRAINAGE MAP



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American Consulting Engineers of Florida, LLC
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STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 600	HILLSBOROUGH	255822-2-52-01

DRAINAGE MAP

SHEET NO. 5

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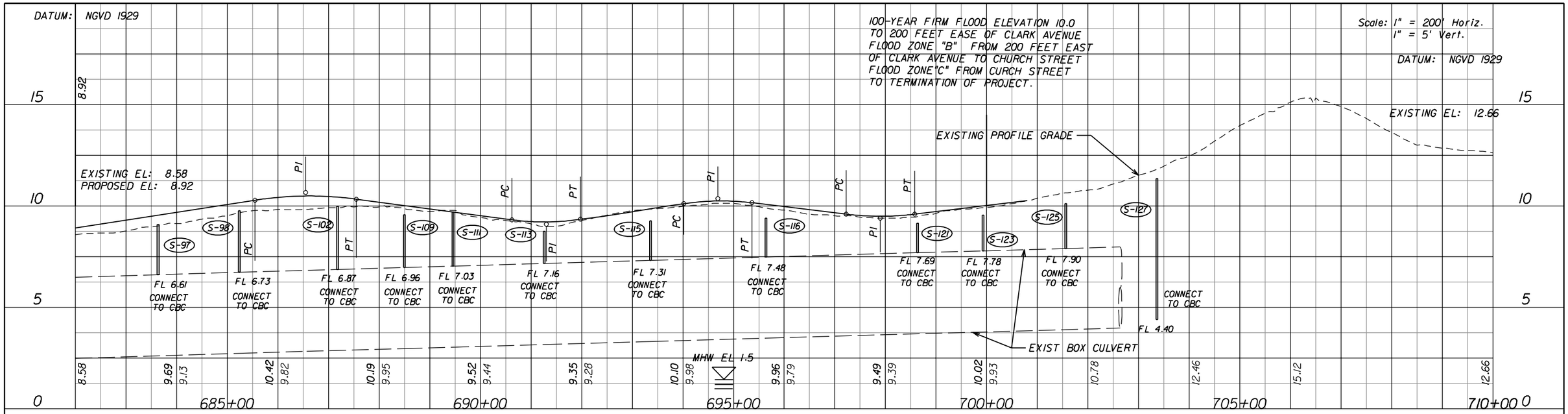

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* = DISCHARGE STRUCTURE

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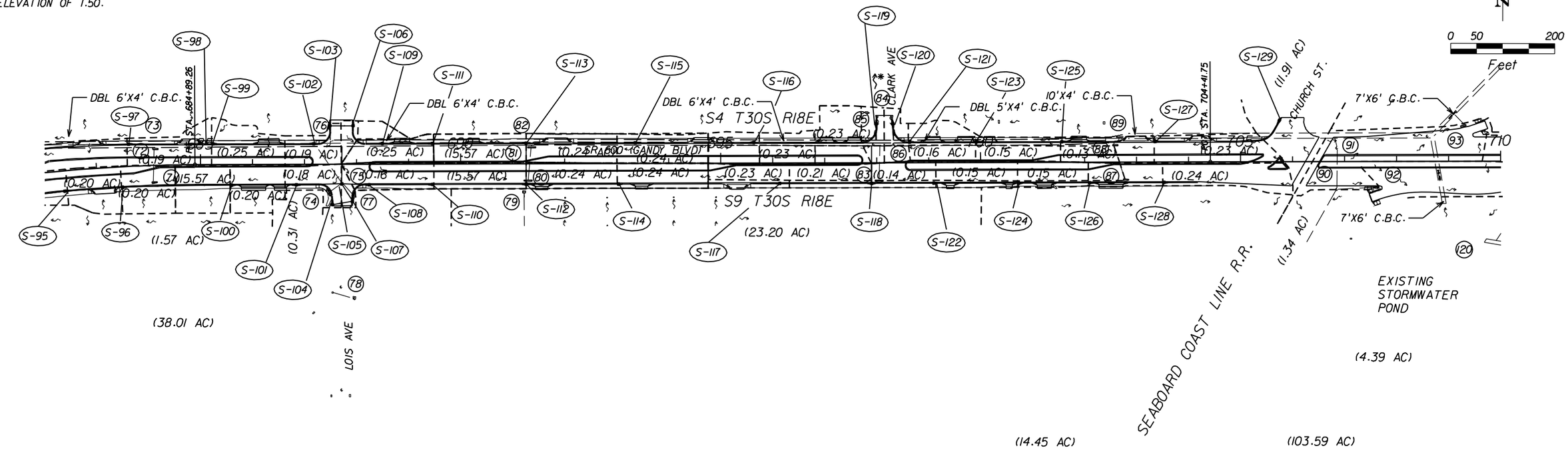

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DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 600	HILLSBOROUGH	255822-2-52-01

DRAINAGE MAP

SHEET NO. 6

DATUM: NGVD 1929

FLOOD ZONE "C"

Scale: 1" = 200' Horiz.
1" = 5' Vert.

DATUM: NGVD 1929

STA 725+49.48 ℄ CONST
END PROJECT
END CONSTRUCTION

EXISTING EL: 12.66

EXISTING EL: 12.38

EXISTING PROFILE GRADE

MHW EL 1.5

12.57

12.38

15
10
5
0

710+00 715+00 720+00 725+00 730+00

EQUATION:
Sta 124+73.40 BK =
Sta 30+00.00 AH

STA 725+49.48 ℄ CONST
END PROJECT
END CONSTRUCTION
(15.66 AC)

PRT STA. 730+77.99

S4 T30S R18E

(0.90 AC)

(1.11 AC)

(1.23 AC)

(0.96 AC)

(1.39 AC)

(1.39 AC)

SR 600 (GANDY BLVD)

SR 573 (Dale Mabry Highway)

120

0 50 200
Feet

N

• = DISCHARGE STRUCTURE

NOTE: ALL DISCHARGE STRUCTURE HAVE A TAILWATER CONDITION EQUIVLANT TO THE MEAN HIGH TIDE ELEVATION OF 1.50.

S9 T30S R18E

S10 T30S R18E

120+80.25
END PROJECT

(15.66 AC)

(5.62 AC)

DM-1

DM-2

SR 600 (Dale Mabry Highway)

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STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 600	HILLSBOROUGH	255822-2-52-01

DRAINAGE MAP

SHEET NO. 7

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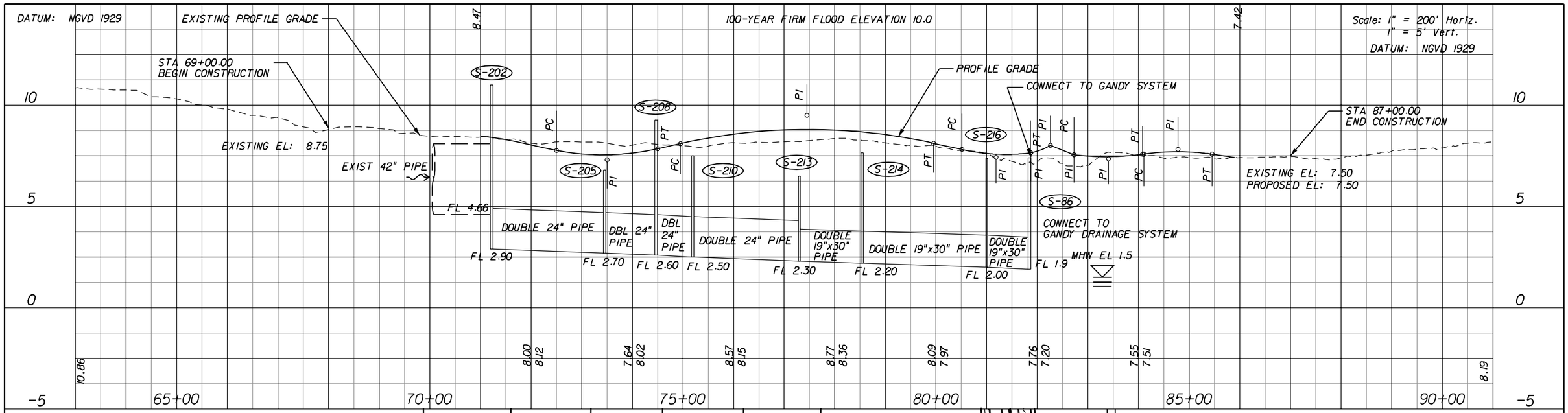

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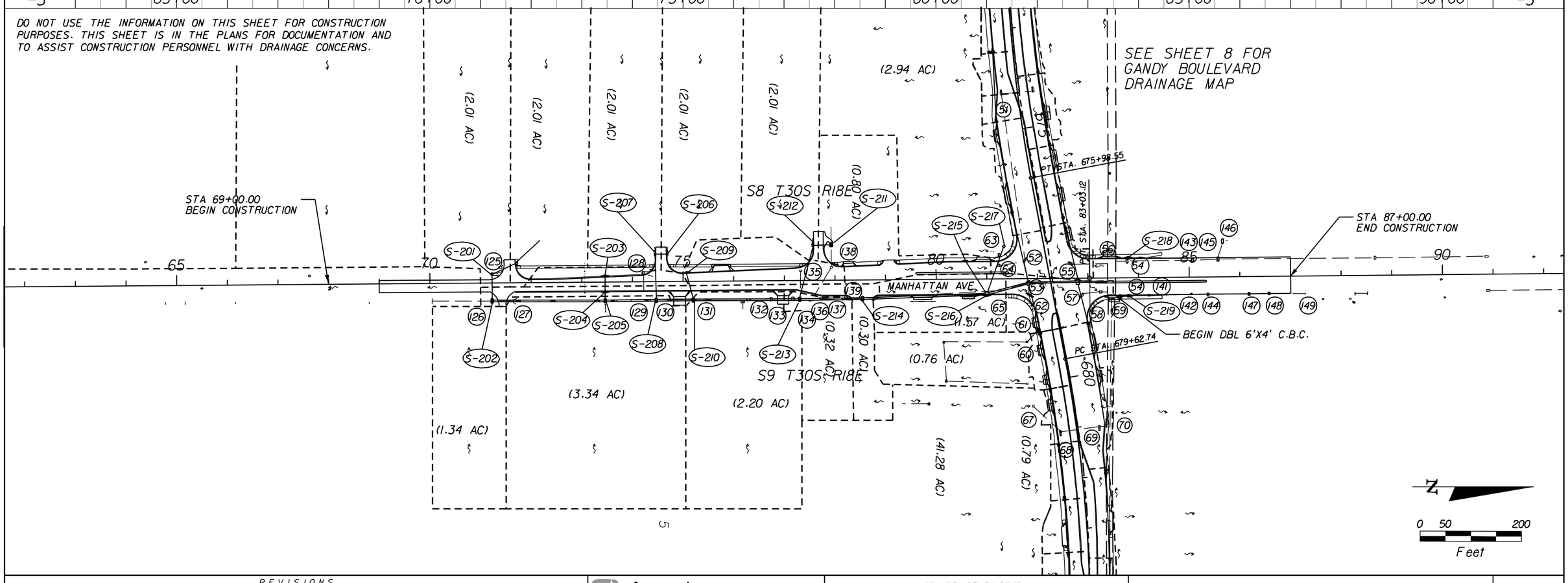

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ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 600	HILLSBOROUGH	255822-2-52-01

DRAINAGE MAP

SHEET NO. 8

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PEA APPENDIX C

Contraflow

Concept Drawings

UNITED STATES MARINE
CORPS RESERVE CENTER

N

NTS

OFFICIAL USE ONLY

ONE LANE CROSSOVER

GANDY BOULEVARD

LEGEND

- LAW ENFORCEMENT VEHICLE
- CONES
- CONTRAFLOW LANE
- NORMAL LANE (AT GRADE)
- NORMAL LANE (ELEVATED)

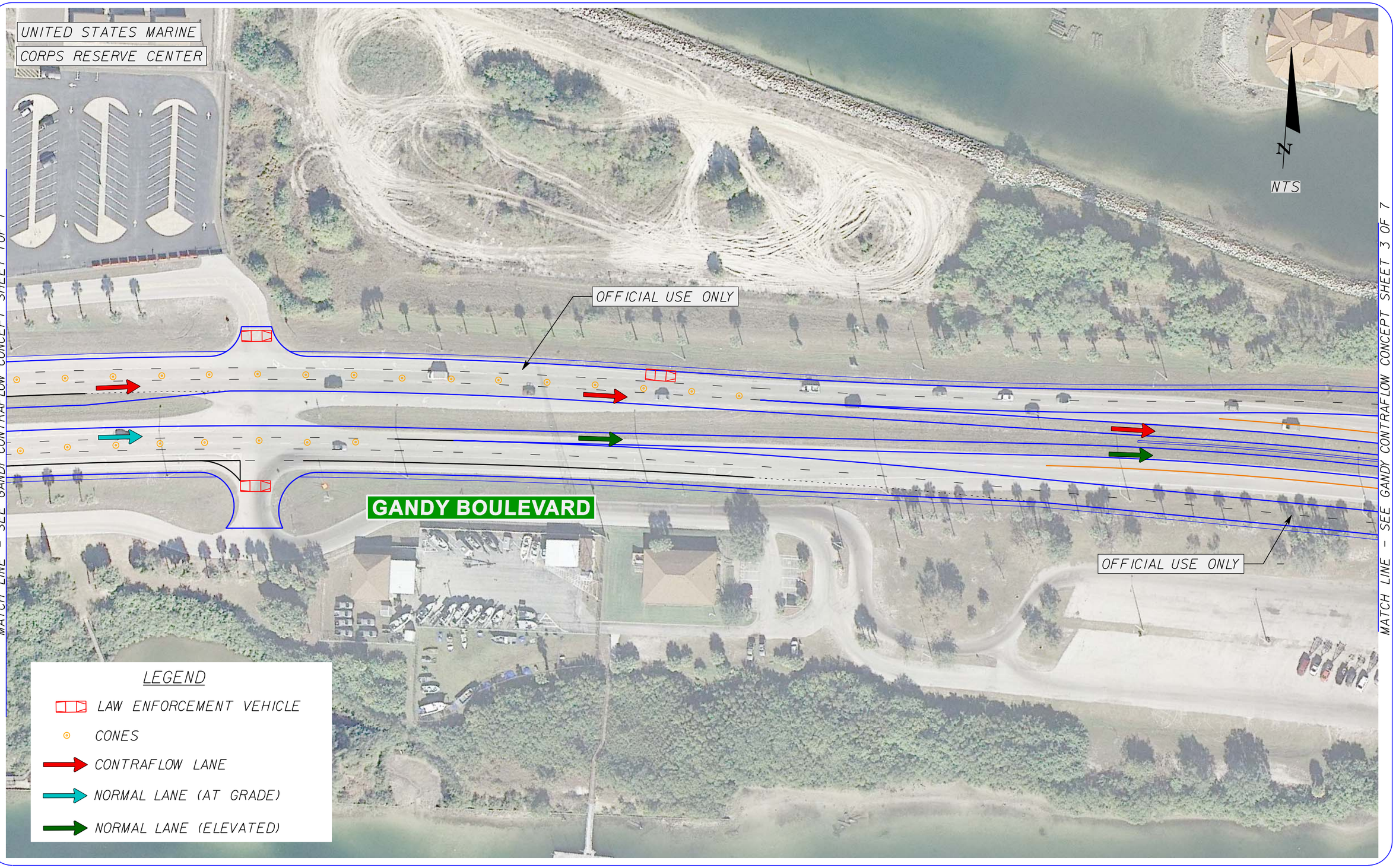
MATCH LINE - SEE GANDY CONTRAFLOW CONCEPT SHEET 2 OF 7

BAYSIDE ENGINEERING

GANDY CONNECTOR PD&E STUDY

GANDY CONTRAFLOW CONCEPT
September 2009

SHEET
1 OF 7

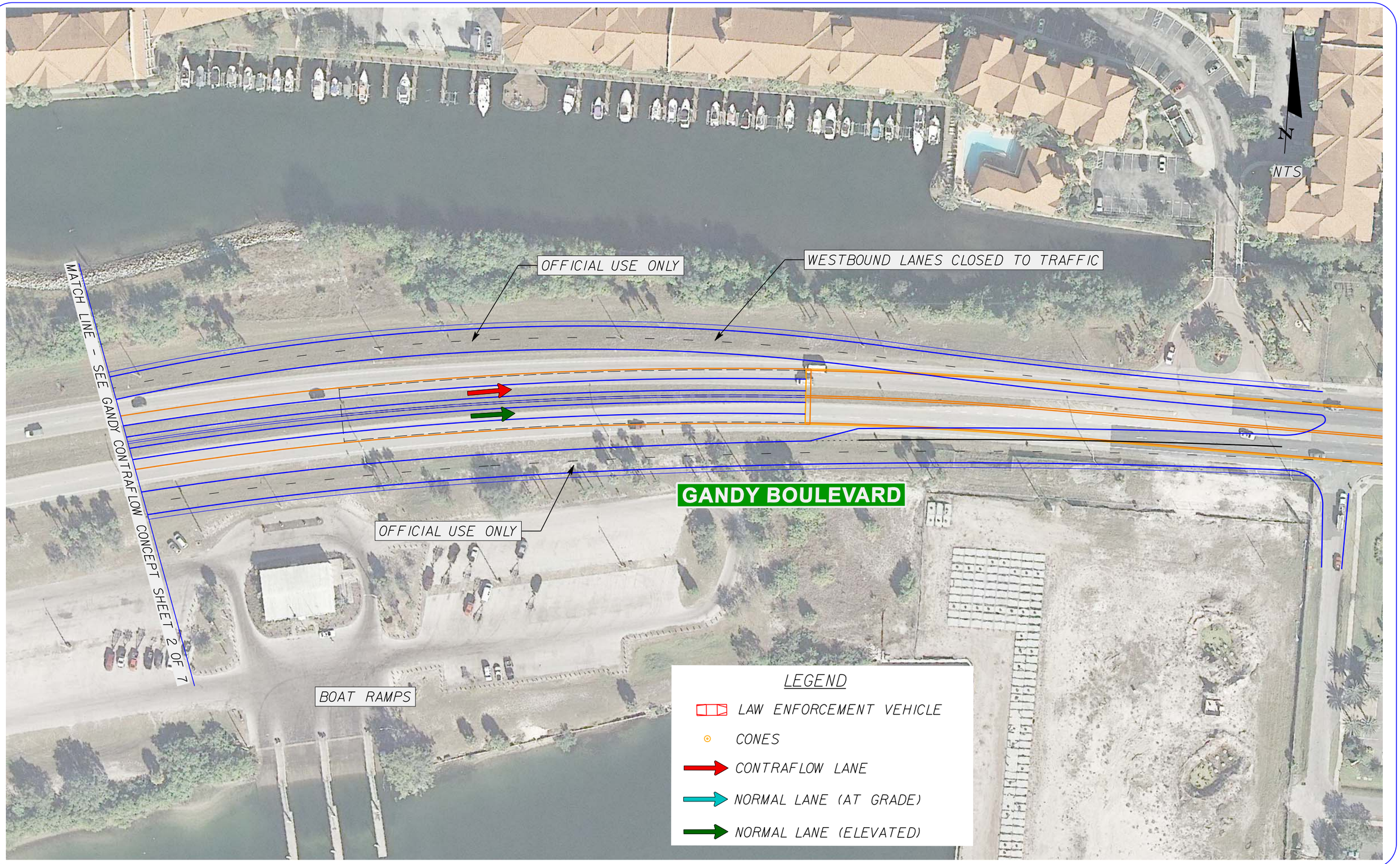


BAYSIDE ENGINEERING

GANDY CONNECTOR PD&E STUDY

GANDY CONTRAFLOW CONCEPT
September 2009

SHEET
2 OF 7



BAYSIDE ENGINEERING

GANDY CONNECTOR PD&E STUDY

GANDY CONTRAFLOW CONCEPT
September 2009

MATCH LINE - SEE CROSSTOWN CONTRAFLOW CONCEPT SHEET 5 OF 7

N

NTS

CROSSTOWN EXPRESSWAY

GANDY BOULEVARD

DALE MABRY

LEGEND

- LAW ENFORCEMENT VEHICLE
- CONES
- CONTRAFLOW LANE
- NORMAL LANE (AT GRADE)
- NORMAL LANE (ELEVATED)

BAYSIDE ENGINEERING

GANDY CONNECTOR PD&E STUDY

CROSSTOWN CONTRAFLOW CONCEPT
September 2009

MATCH LINE - SEE CROSSTOWN CONTRAFLOW CONCEPT SHEET 4 OF 7

NTS

DALE MABRY

CROSSTOWN EXPRESSWAY

LEGEND

- LAW ENFORCEMENT VEHICLE
- CONES
- CONTRAFLOW LANE
- NORMAL LANE (AT GRADE)
- NORMAL LANE (ELEVATED)

MATCH LINE - SEE CROSSTOWN CONTRAFLOW CONCEPT SHEET 6 OF 7

BAYSIDE ENGINEERING

GANDY CONNECTOR PD&E STUDY

CROSSTOWN CONTRAFLOW CONCEPT
September 2009

SHEET
5 OF 7

MATCH LINE - SEE CROSSTOWN CONTRAFLOW CONCEPT SHEET 5 OF 7

DALE MABRY

NTS

CROSSTOWN EXPRESSWAY

LEGEND

- LAW ENFORCEMENT VEHICLE
- CONES
- CONTRAFLOW LANE
- NORMAL LANE (AT GRADE)
- NORMAL LANE (ELEVATED)

MATCH LINE - SEE CROSSTOWN CONTRAFLOW CONCEPT SHEET 7 OF 7

BAYSIDE ENGINEERING

GANDY CONNECTOR PD&E STUDY

CROSSTOWN CONTRAFLOW CONCEPT
September 2009

SHEET
6 OF 7

MATCH LINE - SEE CROSSTOWN CONTRAFLOW CONCEPT SHEET 6 OF 7

NTS

CROSSTOWN EXPRESSWAY

LEGEND

- LAW ENFORCEMENT VEHICLE
- CONES
- CONTRAFLOW LANE
- NORMAL LANE (AT GRADE)
- NORMAL LANE (ELEVATED)

BAYSIDE ENGINEERING

GANDY CONNECTOR PD&E STUDY

CROSSTOWN CONTRAFLOW CONCEPT
September 2009

SHEET
7 OF 7

PEA APPENDIX D

Sight Distance Drawings

AASHTO - Geometric design of Highways and Streets - 2004
Chapter 9 - Intersections
Intersection Sight Distance - Case B1 - Left turn from Minor Road
Intersection Sight Distance (ISD) Along Major Road pg. 659

ISD= 1.47(Vm)(t)

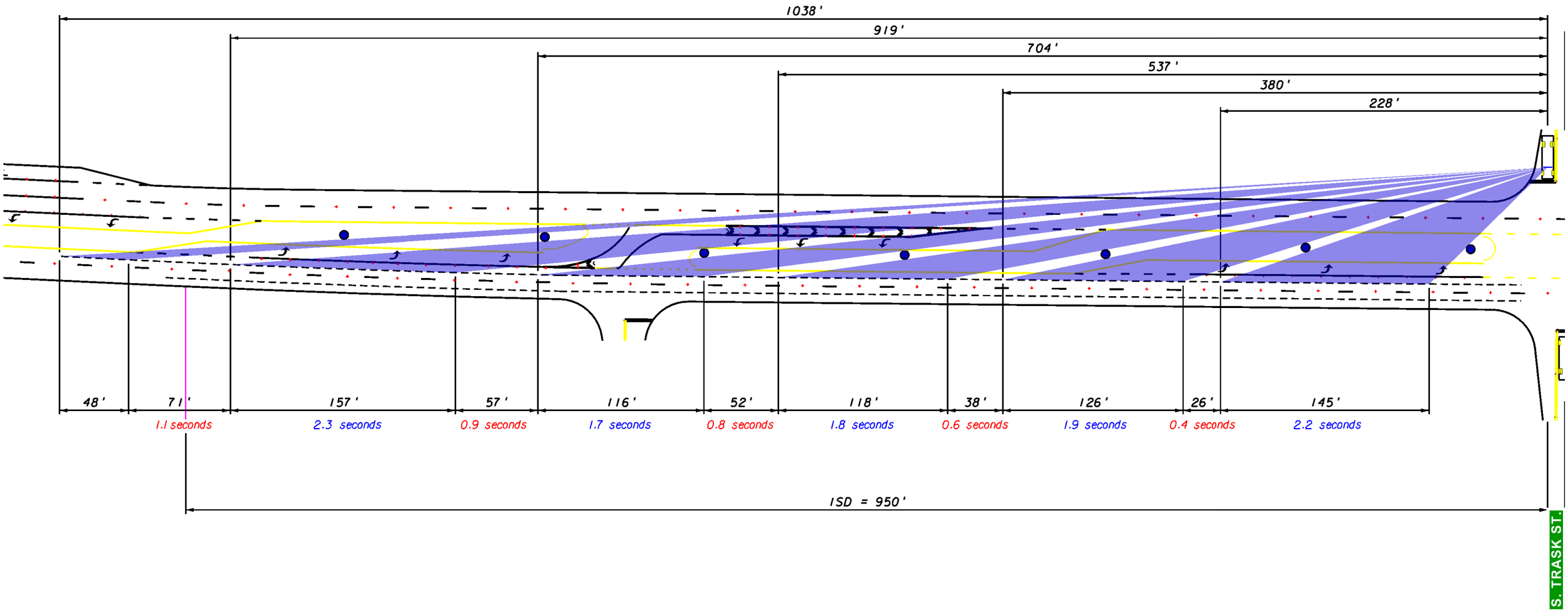
V= 45 mph
t = 11.5 for trucks + 0.7 for each additional lane crossed
with the median treated as three lanes (30' wide) this
adds 4 lanes or 2.8 seconds, so
t = 14.3

ISD= 1.47(45)(14.3)
ISD= 945.9' use 950'

FDOT Design Standards Index No. 546 calls for a 2 second full view of entering vehicle at the required sight distance. Final design of bridge pier locations will require adjustments to the conceptual pier locations to achieve compliance with this requirement.

LEGEND

SIGHT OPPORTUNITY
BRIDGE PIER
x seconds — SIGHT OPPORTUNITY TIME
x seconds — VIEW OBSTRUCTION TIME



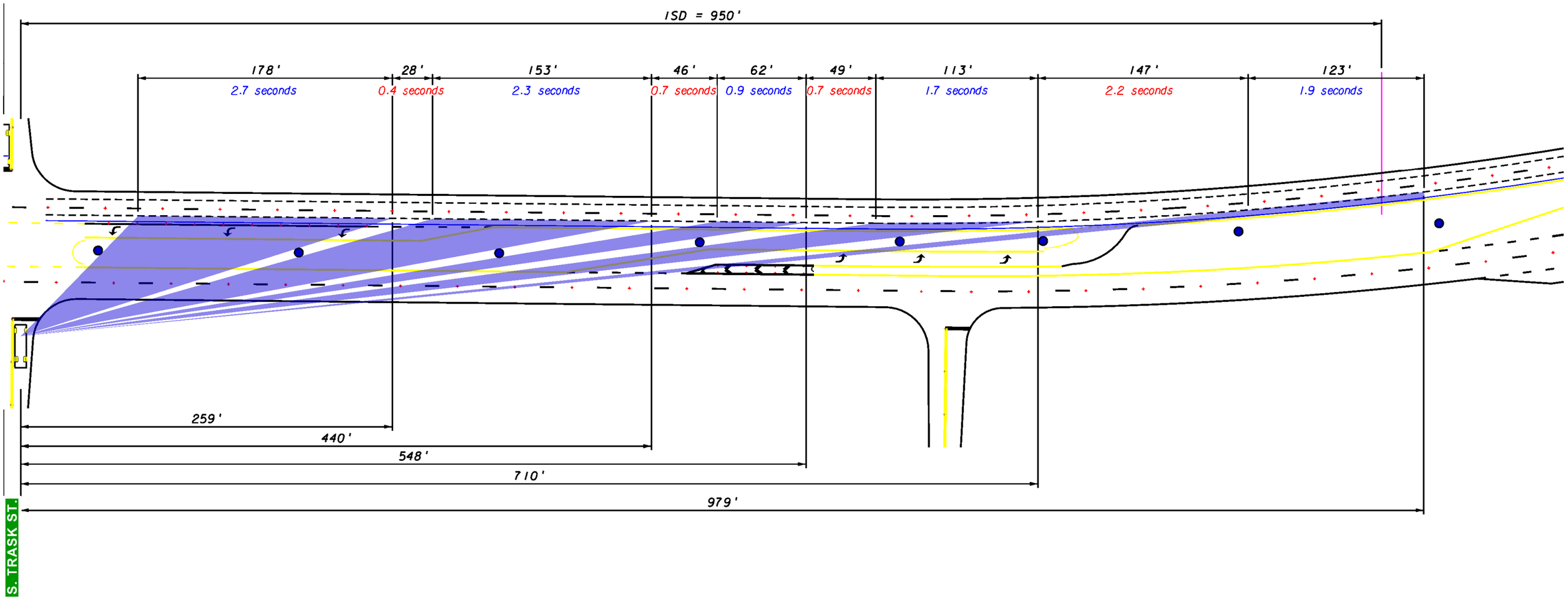
LEGEND

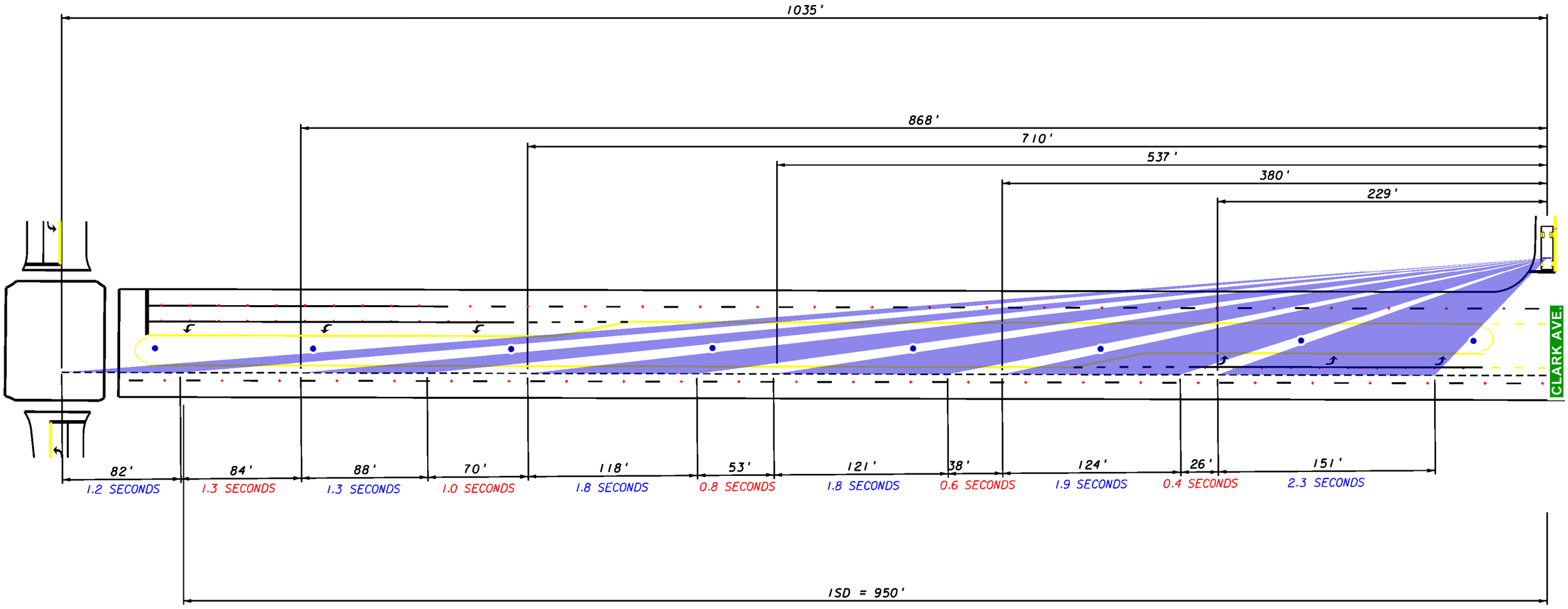
SIGHT OPPORTUNITY

BRIDGE PIER

x seconds — SIGHT OPPORTUNITY TIME

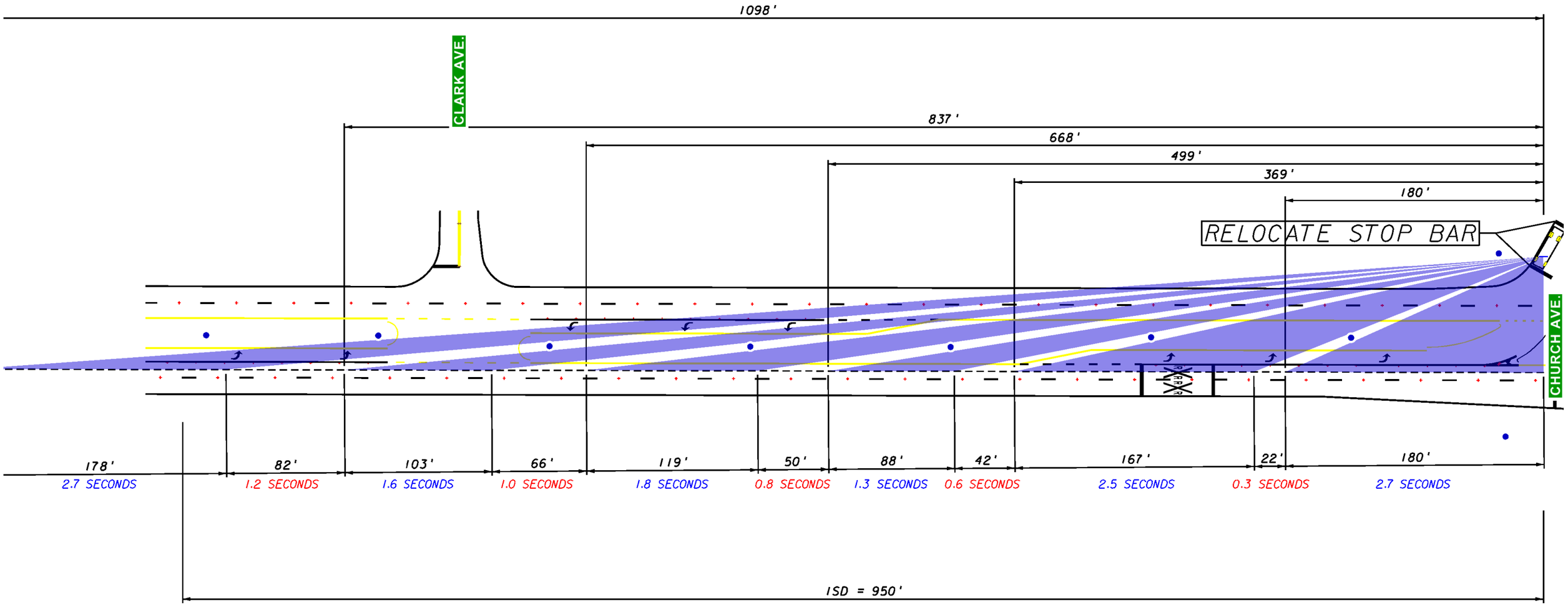
x seconds — VIEW OBSTRUCTION TIME





LEGEND

- SIGHT OPPORTUNITY
- BRIDGE PIER
- x seconds — SIGHT OPPORTUNITY TIME
- x seconds — VIEW OBSTRUCTION TIME



LEGEND

- SIGHT OPPORTUNITY
- BRIDGE PIER
- x seconds — SIGHT OPPORTUNITY TIME
- x seconds — VIEW OBSTRUCTION TIME